Granite School District

7th Grade Science : Curriculum & Assessment Map 2026-2027

Understanding the Secondary Science Curriculum & Assessment Maps

These curriculum and assessment maps are designed to align with the **Utah SEEd Standards** and provide a clear guide for planning instruction and assessments across secondary science courses. They are intended as a flexible resource—a tool to support your teaching rather than a strict rulebook. Your insights and classroom experience are invaluable. If you have feedback, suggestions, or notice ways the maps could better support instruction, please fill out this Resource Feedback Form. Together, we can ensure these maps are as practical and helpful as possible for all science educators.

Strands & Standards	🔑 Key Concepts for Differentiation	Assessment Recommendations	Three Dimensional Instruction (3D)
Strand: Strands are significant areas of learning within a science discipline. They provide an overarching topic or theme to which all of the standards align. **Standard:** The standards are performance expectations. They articulate the essential elements of what students should know and be able to do.	**Key Concepts** are the essential standards identified to assist teachers in the process of **differentiation** in Tier I instruction. These standards represent the core knowledge and skills that require focused attention during small-group instruction for struggling students. By identifying these Key Concepts, teachers can more effectively: • **Target instruction**: They provide a clear focus for intervention and support, ensuring that extra time and resources are spent on the most critical skills. • **Integrate and combine standards**: Teachers can strategically group Instructional Notes, leading to more efficient and connected lessons. • **Allocate time**: They help educators determine where to dedicate more instructional time, ensuring that the most important concepts are taught thoroughly. The identification of Key Concepts is designed to streamline the instructional process, making it easier for teachers to provide targeted support and ensuring all students master the most crucial learning objectives.	In addition to state required assessments, teachers should determine appropriate means to monitor student progress and understanding. **Proficiency Scales** should be used to inform assessment. • **Formative assessments**, such as checks for understanding and CFAs, should be ongoing and constant. A few examples can be found here. • Additionally, **RISE Benchmark modules** can be utilized throughout the year. • **PLCs** should establish common formative assessments across similar courses. • A **performance task** is: "A piece of work students are asked to do to show how well they apply their knowledge, skills, or abilities—from writing an essay to diagnosing and fixing a broken circuit. A **performance assessment** typically consists of *several* performance tasks."[1]	**3D Instruction** is an approach to instruction that integrates the **science and engineering practices**, **crosscutting concepts** and **disciplinary core ideas** together in order to help students make sense of phenomena and solve problems. This approach aims to develop deeper understanding by having students actively use their scientific knowledge and skills to investigate phenomena and solve problems, moving beyond rote memorization to foster scientific literacy and critical thinking skills. • **Focus on Phenomena:** Students explore real-world events to understand how and why they happen. • **Integrated Learning:** Students apply scientific dimensions together to build a complete understanding of science. • **Active Student Engagement:** Students use scientific practices to analyze data, explain findings, and argue their claims. • **Real-World Relevance:** The goal is to develop scientific literacy and problem-solving skills for everyday life.

[1] What Is Performance Assessment? (2019, February 5). *Education Week*. www.edweek.org/teaching-learning/what-is-performance-assessment/2019/02

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Science and Engineering Practices (SEP)	Cross Cutting Concepts (CCC)	Disciplinary Core Ideas (DCI)
The **8 Science and Engineering Practices** help students develop a knowledge of how scientific knowledge is developed; exposing students to a wide range of approaches that can be used to make sense of phenomena and solve problems. These practices help students gather information, reason with it and then communicate their understanding. The practices are not a linear set of instructions, rather they assist students in connecting a wide range of skills and content in order to be proficient in the work of doing science and engineering. *While each standard highlights just one science and engineering practice, during instruction should be engaging in multiple overlapping practices.*	**Cross Cutting Concepts** are interdisciplinary themes that help students see connections between content areas and to scaffold new learning based on their previous experiences in order to **make sense of phenomena**. *While each standard highlights just one cross cutting concept students will engage in many cross cutting concepts within each standard.*	**Disciplinary Core Ideas** in science are the concepts, laws and theories that have a high explanatory value for making sense of phenomena. Core ideas have utility for engaging students in interesting and meaningful instruction that will help students not only in the classroom, but as they make decisions in their personal lives. *When integrating standards into units, consider how you will emphasize the big ideas within the disciplinary core ideas.*

Academic Vocabulary	Resources	Checklist for evaluating and developing 3D science resources
The words listed here are intended as **suggestions** for instructional focus and are **not a definitive or mandatory list**. Educators should feel empowered to select and introduce vocabulary based on student needs, the specific learning context, and the overall objectives of the standard.	7th Grade Science Proficiency Scales 7th Grade Science USBE Core Guides 7th Grade Science USBE SEEd Standards 7th Grade Science USBE OER Textbook 7th Grade Science GSD Model Storylines 7th Grade Science SEEd Storylines 7th Grade Science Assessment Canvas Page OpenSciEd - storylines aligned to middle school science; some storylines for 6th and 8th grades may match the 7th grade standards	❑ Is it aligned to the core? ❑ Do students make sense of a phenomenon or solve a problem? ❑ Are students purposefully engaged in using the science and engineering practices? ❑ Are the crosscutting concepts made explicit to students? ❑ Is the focus on student sensemaking rather than memorization of facts and vocabulary? ❑ Does it engage students in deep levels of thinking and explanation about the phenomenon or problem?

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Year At A Glance: Pacing Example for 7th Grade Science

Quarter 1 - Strand 7.1: Forces Interact with Matter	**Aug - Oct** (about 9 weeks)
🔑 **7.1.1 Carry out an investigation** which provides evidence that a change in an object's motion is dependent on the mass of the object and the sum of the forces acting on it.	2 weeks
🔑 **7.1.2** Apply Newton's Third Law ***to design a solution*** *to a problem involving the motion of two colliding objects in a system.*	2 weeks *(can be taught with 7.1.1)*
🔑 **7.1.3 Construct a model** using observational evidence to describe the nature of fields existing between objects that exert forces on each other even though the objects are not in contact.	2 weeks
7.1.4 Collect and analyze data to determine the factors that affect the strength of electric and magnetic forces.	1 week *(can be taught with 7.1.3)*
7.1.5 Engage in argument from evidence to support the claim that gravitational interactions within a system are attractive and dependent upon the masses of interacting objects.	2 weeks
Quarter 2 - Strand 7.2: Changes to Earth Over Time	**Oct - Dec** (about 8 weeks)
🔑 **7.2.1 Develop a model** of the rock cycle to describe the relationship between energy flow and matter cycling that create igneous, sedimentary, and metamorphic rocks.	2 weeks *(can be taught with 7.2.2 or 7.2.6)*
🔑 **7.2.2 Construct an explanation** based on evidence for how processes have changed Earth's surface at varying time and spatial scales.	2 weeks
7.2.3 Ask questions to *identify constraints* of specific geologic hazards and *evaluate competing design solutions* for maintaining the stability of human-engineered structures such as homes, roads and bridges.	1 week *(can be taught with 7.2.2)*
7.2.4 Develop and use a scale model of the matter in the Earth's interior to demonstrate how differences in density and chemical composition cause the formation of the crust, mantle, and core.	1 week
🔑 **7.2.5 Ask questions** and **analyze and interpret data** about the patterns between plate tectonics and...	2 weeks
7.2.6 Make an argument from evidence for how the geologic time scale shows the age and history of Earth.	1 week *(can be taught with 7.2.1 or 7.2.5)*
Quarter 3 - Strand 7.3: Structure and Function of Life, **Strand 7.4:** Reproduction and Inheritance	**Jan - Mar** (about 9 weeks)
🔑 **7.3.1 Plan and carry out an investigation** that provides evidence that the basic structures of living things are cells. Emphasize that cells can form single-celled or multicellular organisms and that multicellular organisms are made of different types of cells.	1 week *(can be taught with 7.3.2 and 7.3.3)*
🔑 **7.3.2 Develop and use a model** to describe the function of a cell in a living system and the way parts of cells contribute to cell function.	2 weeks *(can be taught with 7.3.1 and 7.3.3)*
7.3.3 Construct an explanation using evidence to explain how body systems have various levels of organization.	1 week *(can be taught with 7.3.1 and 7.3.2)*
🔑 **7.4.1 Develop and use a model** to explain the effect that different types of reproduction have on genetic variation.	2 weeks *(can be taught with 7.4.3 and 7.4.4)*
🔑 **7.4.3 Develop and use a model** to describe why genetic mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	2 weeks *(can be taught with 7.4.1 and 7.4.4)*
7.4.4 Obtain, evaluate, and communicate information about the technologies that have changed the way humans affect the inheritance of desired traits in organisms.	1 week *(can be taught with 7.4.3 or 7.4.1)*
Quarter 4 - Strand 7.4: Reproduction and Inheritance, **Strand 7.5:** Changes in Species Over Time	**Mar - May** (about 9 weeks)
🔑 **7.4.2 Obtain, evaluate and communicate information** about specific animal and plant adaptations and structures that affect the probability of successful reproduction.	2 weeks
🔑 **7.5.1 Construct an explanation** that describes how the genetic variation of traits in a population can affect some individuals' probability of surviving and reproducing in a specific environment.	2 weeks *(can be taught with 7.4.2)*
🔑 **7.5.2 Analyze** and interpret **data** for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth.	1 week
7.5.3 Construct explanations that describe the patterns of body structure similarities and differences between modern organisms and between ancient and modern organisms to infer possible evolutionary relationships.	1 week *(can be taught with 7.5.2)*
7.5.4 Analyze displays of pictorial **data** to compare patterns in the embryological development across multiple species to identify similarities and differences not evident in the fully formed anatomy.	1 week *(can be taught with 7.5.2)*

*This is only an example of a scope and sequence you could use to approach the standards.

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Quarter 1

Strand 7.1 Forces Are Interactions Between Matter

Forces are push or pull interactions between two objects. Changes in motion, balance and stability, and transfers of energy are all facilitated by forces on matter. Forces, including electric, magnetic, and gravitational forces, can act on objects that are not in contact with each other. Scientists use data from many sources to examine the cause and effect relationships determined by different forces.

Standard 7.1.1🔑	3D Instructional Focus	Assessment Resources

🔑**Carry out an investigation** which provides evidence that a change in an object's motion is dependent on the mass of the object and the sum of the forces acting on it. *Various experimental designs should be evaluated to determine how well the investigation measures an object's motion.* Emphasize conceptual understanding of Newton's First and Second Laws. Calculations will only focus along one-dimensional movement; the use of vectors will be introduced in high school. (PS2.A, PS2.C, ETS1.A, ETS1.B, ETS1.C)
 	
**This is an engineering standard.*
	• **SEP:** Planning and Carrying Out an Investigation
	• **CCC:** Stability and Change
	• **DCI:** Forces and Motion
	  ○ PS2.A: The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion.
	  ○ ETS1.A, ETS1.B, ETS1.C
		RISE Benchmark Modules
		Benchmark Cluster 7.1.1
		
		USBE Formative Assessments
		7.1.1 Sled Pull (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.1.1 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		7.1.1 Flicking Coins

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standards **7.1.1** and **7.1.2** can be combined into a single unit about **Newton's Laws**, with an *engineering challenge*.	push, pull, motion, speed, net force, gravity, acceleration, balanced forces, unbalanced forces, dependent variable, independent variable, Newton (unit)	• GSD 7.1.1 & 7.1.2 Force and Motion Storyline • Strand 7.1 SEEd Storylines • OpenSciEd: Contact Forces Storyline (7.1.1 & 7.1.2)

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Quarter 1

Strand 7.1 Forces Are Interactions Between Matter

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Standard 7.1.2🔑	3D Instructional Focus	Assessment Resources

🔑Apply Newton's Third Law to **design a solution** to a *problem involving the motion of two colliding objects in a system.* Examples could include collisions between two moving objects or between a moving object and a stationary object. (PS2.A, ETS1.A, ETS1.B, ETS1.C)
 	
**This is an engineering standard.*
	• **SEP:** Designing Solutions
	• **CCC:** Systems
	• **DCI:** Forces and Motion
	  ○ PS2.A: For any pair of interacting objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction (Newton's third law).
	  ○ ETS1.A, ETS1.B, ETS1.C
		RISE Benchmark Modules
		Benchmark Cluster 7.1.2
		
		USBE Formative Assessments
		7.1.2 Diamond Phone Case (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.1.2 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		7.1.2 Space Walk

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standards **7.1.1** and **7.1.2** can be combined into a single unit about **Newton's Laws**, with an *engineering challenge*.	law of conservation of energy, energy transfer, push, pull, transfer, force, balanced force, friction, direction of a force, gravity, criteria, constraint, prototype, iteration, impact, action/reaction, acceleration, Newton (unit)	• GSD 7.1.1 & 7.1.2 Force and Motion Storyline • Strand 7.1 SEEd Storylines • OpenSciEd: Contact Forces Storyline (7.1.1 & 7.1.2)

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Quarter 1

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Standard 7.1.3🔑	3D Instructional Focus	Assessment Resources
🔑**Construct a model** using observational evidence to describe the nature of fields existing between objects that exert forces on each other even though the objects are not in contact. Emphasize the cause and effect relationship between properties of objects (such as magnets or electrically charged objects) and the forces they exert. (PS2.B)	• **SEP:** Developing and Using Models • **CCC:** Cause and Effect • **DCI:** Forces and Motion ○ PS2.B: Electric and magnetic (electromagnetic) forces can be attractive or repulsive, and their sizes depend on the magnitudes of the charges, currents, or magnetic strengths involved and on the distances between the interacting objects. Forces that act at a distance (electric and magnetic) can be explained by fields that extend through space and can be mapped by their effect on a test object (a ball, a charged object, or a magnet, respectively).	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.1.3 Magnet Drop (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.1.3 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standards **7.1.3** and **7.1.4** can be combined into a single unit on **electrical and magnetic forces,** with an *investigation on factors that affect strength of such forces.*	distribution, charged particles, electrical charge, negatively charged, positively charged, neutral/neutrally charged, north pole, south pole, magnetic field, electrical field, static electricity, attraction, repulsion	• GSD 7.1.3 & 7.1.4 Forces and Interactions Storyline • Strand 7.1 SEEd Storylines • OpenSciEd: Forces at a Distance (7.1.3 & 7.1.4)

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Standard 7.1.4	3D Instructional Focus	Assessment Resources
Collect and analyze data to determine the factors that affect the strength of electric and magnetic forces. Examples could include electromagnets, electric motors, or generators. Examples of data could include the effect of the number of turns of wire on the strength of an electromagnet, or of increasing the number or strength of magnets on the speed of an electric motor. (PS2.B)	• SEP: Analyzing and Interpreting Data • CCC: Cause and Effect • DCI: Forces and Motion ○ PS2.B: Electric and magnetic (electromagnetic) forces can be attractive or repulsive, and their sizes depend on the magnitudes of the charges, currents, or magnetic strengths involved and on the distances between the interacting objects. Forces that act at a distance (electric and magnetic) can be explained by fields that extend through space and can be mapped by their effect on a test object (a ball, a charged object, or a magnet, respectively).	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.1.4 Doorbell (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.1.4 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standards **7.1.3** and **7.1.4** can be combined into a single unit on **electrical and magnetic forces,** with an *investigation on factors that affect strength of such forces.*	attraction, charge, conductor, electric charge, electric current, electric field, electric force, electromagnetic field, electromagnet, magnetic field, magnetic field lines, magnetic force, permanent magnet, repulsion	• GSD 7.1.3 & 7.1.4 Forces and Interactions Storyline • Strand 7.1 SEEd Storylines • OpenSciEd: Forces at a Distance (7.1.3 & 7.1.4)

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Strand 7.1 Forces Are Interactions Between Matter

Forces are push or pull interactions between two objects. Changes in motion, balance and stability, and transfers of energy are all facilitated by forces on matter. Forces, including electric, magnetic, and gravitational forces, can act on objects that are not in contact with each other. Scientists use data from many sources to examine the cause and effect relationships determined by different forces.

Standard 7.1.5	3D Instructional Focus	Assessment Resources
Engage in argument from evidence to support the claim that gravitational interactions within a system are attractive and dependent upon the masses of interacting objects. Examples of evidence for arguments could include mathematical data generated from various simulations. (PS2.B)	• SEP: Engaging in Argument From Evidence • CCC: Systems • DCI: Forces and Motion ○ PS2.B: Gravitational forces are always attractive. There is a gravitational force between any two masses, but it is very small except when one or both of the objects have large mass—e.g., Earth and the sun.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.1.5 Planet 9 (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.1.5 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.1.5** can be taught as a stand alone unit, or parallel to **7.1.1** while *exploring* the **effect of mass on forces**.	gravity, force, mass, attraction, orbit, magnitude, galaxy, solar system, satellite, force fields, ellipse, proportional, kilogram, proportionally, attraction, orbit, period	• Strand 7.1 SEEd Storylines

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Quarter 2

Strand 7.2 Changes to Earth Over Time

Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.

Standard 7.2.1🔑	3D Instructional Focus	Assessment Resources
🔑**Develop a model** of the rock cycle to describe the relationship between energy flow and matter cycling that create igneous, sedimentary, and metamorphic rocks. Emphasize the processes of melting, crystallization, weathering, deposition, sedimentation, and deformation, which act together to form minerals and rocks. (ESS2.A)	• SEP: Develop and Use a Model • CCC: Energy and Matter • DCI: Earth Materials and Systems ○ ESS1.C: Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches.	**RISE Benchmark Modules** Benchmark Cluster 7.2.1 **USBE Formative Assessments** 7.2.1Reynisfjara Beach (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.2.1 (Coming Soon!) **GSD Teacher Written Sample Assessments** 7.2.1 Rock Cycle **NGSS Sample Assessments** 7.2.1 A View from Below 7.2.1 Rock Cycle Items
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.1** can be combined with **7.2.6** to *explore the stories rocks tell about our Earth.* OR Standard **7.2.1** can be taught as a stand alone unit, or parallel to **7.2.2** and **7.2.3**, which include all of the *processes involved in the rock cycle, such as* **erosion and deposition**.	igneous, sedimentary, metamorphic, melting, crystallization, weathering, erosion, sedimentation, deposition, deformation, minerals, heat energy, atmosphere	• GSD 7.2.1 & 7.2.6 Rocks Tell Stories • 7.2.1 Traveling Thru the Rock Cyle • Strand 7.2 SEEd Storylines • OpenSciEd: Plate Tectonics & Rock Cycling (7.2.1, 7.2.2, 7.2.3)

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Standard 7.2.2🔑	3D Instructional Focus	Assessment Resources

🔑**Construct an explanation** based on evidence for how processes have changed Earth's surface at varying time and spatial scales. Examples of processes that occur at varying time scales could include slow plate motions or rapid landslides. Examples of processes that occur at varying spatial scales could include uplift of a mountain range or deposition of fine sediments. (ESS2.A, ESS2.C)	• SEP: Construct an Explanation
	• CCC: Scale, Proportion, and Quantity
	• DCI: Earth Materials and Systems
	  ○ ESS2.A: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.
	  ○ ESS2.C: Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.
		RISE Benchmark Modules
		Benchmark Cluster 7.2.2
		
		USBE Formative Assessments
		7.2.2 Hoodoos (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.2.2 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		NA

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.2** and **7.2.3** can be combined into a single unit exploring **Earth's geologic processes** and the *impacts of processes such as earthquakes on humans.*	earthquake, volcanic eruptions, core, crust, mantle, wind, temperature, pressure, continent, erosion, weathering, magma, lava, igneous, sedimentary, metamorphic, mineral, meteor, crater, mountain, plate tectonics, ocean, continental drift, subduction zone, divergent boundary, convergent boundary, transform boundary, hot spot, fault, tsunami, hurricane, tornado, fracture, folding, compressing, sea floor spreading, layer, ridge, rock cycle, trench, plateau, slope, landslides, floods, caves	• GSD 7.2.2 & 7.2.3 Geologic Hazards in Utah • Strand 7.2 SEEd Storylines • OpenSciEd: Plate Tectonics & Rock Cycling (7.2.1, 7.2.2, 7.2.3) • OpenSciEd: Natural Hazards (7.2.2 & 7.2.3)

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Strand 7.2 Changes to Earth Over Time

Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.

Standard 7.2.3	3D Instructional Focus	Assessment Resources

Ask questions to *identify constraints* of specific geologic hazards and *evaluate competing design solutions* for maintaining the stability of human-engineered structures such as homes, roads and bridges. Examples of geologic hazards could include earthquakes, landslides, or floods. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)
 	
**This is an engineering standard.*
	• SEP: Asking Questions and Defining Problems
	• CCC: Stability and Change
	• DCI: Natural Hazards
	  ○ ESS2.A: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.
	  ○ ESS2.C: Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.
	  ○ ETS1.A, ETS1.B, ETS1.C
		RISE Benchmark Modules
		NA
		
		USBE Formative Assessments
		7.2.3 Building Design (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.2.3 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		NA

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.2** and **7.2.3** can be combined into a single unit exploring **Earth's geologic processes** and the *impacts of processes such as earthquakes on humans.*	aftershock, density, distribution, elevation, epicenter, geographic, gradual, human activity, intensity, magnitude, orientation, pressure, redistribute, seismograph, tectonic, tilt, time scale, transfer, catastrophic, debris, development, economic, frequency, impact, natural process, satellite image, constraints, criteria, prototype, iteration	• GSD 7.2.2 & 7.2.3 Geologic Hazards in Utah • Strand 7.2 SEEd Storylines • OpenSciEd: Plate Tectonics & Rock Cycling (7.2.1, 7.2.2, 7.2.3) • OpenSciEd: Natural Hazards (7.2.2 & 7.2.3)

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Quarter 2

Strand 7.2 Changes to Earth Over Time

Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.

Standard 7.2.4	3D Instructional Focus	Assessment Resources
Develop and use a scale model of the matter in the Earth's interior to demonstrate how differences in density and chemical composition (silicon, oxygen, iron, and magnesium) cause the formation of the crust, mantle and core. (ESS2.A)	• SEP: Develop and Use a Model • CCC: Cause and Effect • DCI: Earth Materials and Systems ○ ESS2.A: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.2.4 Mars' Interior (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.2.4 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.4** can be taught as a stand alone unit, prior to, or parallel to previous **7.2** standards.	convection, convection current, plate tectonics, earthquake, element, continental, oceanic, plate, trench, subduction, ridge, volcanic, convergence, divergence, compression, extension, igneous rock, sedimentary rock, metamorphic rock	• Strand 7.2 SEEd Storylines

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Quarter 2

Strand 7.2 Changes to Earth Over Time

Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.

Standard 7.2.5🔑	3D Instructional Focus	Assessment Resources
🔑**Ask questions** and **analyze and interpret data** about the patterns between plate tectonics and: (1) The occurrence of earthquakes and volcanoes. (2) Continental and ocean floor features. (3) The distribution of rocks and fossils. Examples could include identifying patterns on maps of earthquakes and volcanoes relative to plate boundaries, the shapes of the continents, the locations of ocean structures (including mountains, volcanoes, faults, and trenches), or similarities of rock and fossil types on different continents. (ESS2.B)	• SEP: Ask Questions, and Analyze and Interpret Data • CCC: Patterns • DCI: Plate Tectonics and Large-Scale System Interactions ○ ESS1.C: The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. ○ ESS2.B: Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.2.5 Galapagos Islands (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.2.5 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.5** can be taught as a stand alone unit, or combined into a single unit with **7.2.6**, where **the age and history of Earth** is *explored by looking at rock strata, fossil records, superposition, and uniformitarianism.*	convection, convection current, element, continental, oceanic, plate, trench, subduction, ridge, volcanic, convergent, divergent, compression, extension, igneous rock, sedimentary rock, metamorphic rock, transform, boundaries, fault, hot spot, crust, mantle, core, density	• Strand 7.2 SEEd Storylines

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Quarter 2

Strand 7.2 Changes to Earth Over Time

Earth's processes are dynamic and interactive and are the result of energy flowing and matter cycling within and among Earth's systems. Energy from the sun and Earth's internal heat are the main sources driving these processes. Plate tectonics is a unifying theory that explains crustal movements of Earth's surface, how and where different rocks form, the occurrence of earthquakes and volcanoes, and the distribution of fossil plants and animals.

Standard 7.2.6	3D Instructional Focus	Assessment Resources
Make an argument from evidence for how the geologic time scale shows the age and history of Earth. Emphasize scientific evidence from rock strata, the fossil record, and the principles of relative dating, such as superposition, uniformitarianism, and recognizing unconformities. (ESS1.C)	• SEP: Engaging in Argument from Evidence • CCC: Scale, Proportion, and Quantity • DCI: History of Planet Earth ○ ESS1.C: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.2.6 Gogi Sparillis Fossils (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.2.6 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.2.6** can be combined with **7.2.1** to *explore the stories rocks tell about our Earth.* OR Standard **7.2.6** can be taught as a stand alone unit, or combined into a single unit with **7.2.5**, where **the age and history of Earth** is *explored by looking at rock strata, fossil records, superposition, and uniformitarianism.*	erosion, weathering, fossil, ancient, prehistoric, layer, formation, strata, mineral, sedimentary, sediment, metamorphic, volcanic, superposition, cross-cutting, fault, fold, geology, geological, stratigraphy, relative dating, uplift, intrusion, sequence, igneous	• GSD 7.2.1 & 7.2.6 Rocks Tell Stories • Strand 7.2 SEEd Storylines

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Quarter 3

Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.3.1🔑	3D Instructional Focus	Assessment Resources
🔑**Plan and carry out an investigation** that provides evidence that the basic <u>structures</u> of living things are cells. Emphasize that cells can form single-celled or multicellular organisms and that multicellular organisms are made of different types of cells. (LS1.A)	• SEP: Planning and Carrying Out Investigations • CCC: Structure and Function • DCI: Structure and Function ○ LS1.A: All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.3.1 Lichen (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.3.1 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.3.1** can be combined with **7.3.2** and **7.3.3** into a single unit about **cell structure and organization into systems**, *investigating cell structure, tissues, organs, and organ systems.*	cells, structure, multicellular, unicellular, organisms, bacteria, protist, algae, magnify, microscope, nucleus, cell wall, cell membrane, chloroplast, tissues, organ, system, organism levels of organization, bacteria, bacterial colonies, yeast, magnify, microscope, nucleus, cell wall, cell membrane, algae, chloroplast(s), protozoa	• GSD Strand 7.3 Structure and Function of Life • Teach.Genetics Amazing Cells (7.3) • Strand 7.3 SEEd Storylines • OpenSciEd: Cells and Systems (Strand 7.3 & 7.4.1)

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Quarter 3

Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.3.2🔑	3D Instructional Focus	Assessment Resources
🔑**Develop and use a model** to describe the function of a cell in living systems and the way parts of cells contribute to cell function. Emphasize the cell as a system, including the interrelating roles of the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall. (LS1.A)	• SEP: Developing and Using Models • CCC: Structure and Function • DCI: Structure and Function ○ LS1.A: Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.3.2 Plant Cells (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.3.2 (Coming Soon!) **GSD Teacher Written Sample Assessments** 7.3.2 Cell Model Analogy

Instructional Notes	Academic Vocabulary	Lesson Planning Resources
Standard **7.3.2** can be combined with **7.3.1** and **7.3.3** into a single unit about **cell structure and organization into systems**, *investigating cell structure, tissues, organs, and organ systems.*	structure, function, cell, system, nucleus, chloroplast, mitochondria, cell membrane, cell wall, organelle, Unicellular, multicellular, nucleus, chloroplast, mitochondrion, cell membrane, cell wall, energy, bacteria, cytoplasm, organelle	• GSD Strand 7.3 Structure and Function of Life • Teach.Genetics Amazing Cells (7.3) • Strand 7.3 SEEd Storylines • OpenSciEd: Cells and Systems (Strand 7.3 & 7.4.1)

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Quarter 3

Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.3.3	3D Instructional Focus	Assessment Resources
Construct an explanation using evidence to explain how body systems have various levels of organization. Emphasize that cells form tissues, tissues form organs, and organs form systems specialized for particular body functions. Examples could include relationships between the circulatory, excretory, digestive, respiratory, muscular, skeletal, or nervous systems. Specific organ functions will be taught at the high school level. (LS1.A)	• SEP: Constructing Explanations • CCC: Structure and Function • DCI: Structure and Function ○ LS1.A: In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.	**RISE Benchmark Modules** Benchmark Cluster 7.3.3 **USBE Formative Assessments** 7.3.3 Turtle Respiration (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.3.3 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA

Instructional Notes	Academic Vocabulary	Lesson Planning Resources
Standard **7.3.3** can be combined with **7.3.1** and **7.3.2** into a single unit about **cell structure and organization into systems**, *investigating cell structure, tissues, organs, and organ systems.*	body system, tissue, organ, organ system, structure, function, circulatory system, excretory system, digestive system, respiratory system, muscular system, skeletal system, nervous system	• GSD Strand 7.3 Structure and Function of Life • Teach.Genetics: Amazing Cells (7.3) • Strand 7.3 SEEd Storylines • OpenSciEd: Cells and Systems (Strand 7.3 & 7.4.1)

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Quarter 3

Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.4.1🔑	3D Instructional Focus	Assessment Resources

🔑**7.4.1 Develop and use a model** to explain the effect that different types of reproduction have on genetic variation, including asexual and sexual reproduction. (LS1.B, LS3.A, LS3.B)	• SEP: Developing and Using Models
	• CCC: Cause and Effect
	• DCI: Growth and Development of Organisms
	  ○ LS3.A: Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited.
	  ○ LS3.B: In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring.
		RISE Benchmark Modules
		Benchmark Cluster 7.4.1
		Benchmark Cluster 7.4.1 B
		
		USBE Formative Assessments
		7.4.1 Banana Extinction (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.4.1 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		NA

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.4.1** can be combined with **7.4.3** and **7.4.4** in a single unit about **reproduction and inheritance,** *exploring genetic mutations and genetic technologies.*	reproduction, genetic variation, asexual reproduction, sexual reproduction, breed, fertilize, gene, heredity, chromosome	• GSD 7.4.1 Reproduction and Inheritance • Teach.Genetics: Genes, Traits, & Change Over Time • Strand 7.4 SEEd Storylines • OpenSciEd: Genetics (Strand 7.4)

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Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.4.3🔑	3D Instructional Focus	Assessment Resources

🔑**Develop and use a model** to describe why genetic mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism. Emphasize the conceptual idea that changes to traits can happen because of genetic mutations. Specific changes of genes at the molecular level, mechanisms for protein synthesis, and specific types of mutations will be introduced at the high school level. (LS3.A, LS3.B)	• SEP: Developing and Using Models
	• CCC: Structure and Function
	• DCI: Inheritance of Traits
	  ○ LS3.A: Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions of the organism and thereby change traits.
	  ○ LS3.B: In addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others harmful, and some neutral to the organism.
		RISE Benchmark Modules
		Benchmark Cluster 7.4.3
		
		USBE Formative Assessments
		7.4.3 Athlete Genes (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.4.3 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		7.4.3 and/or 7.5.1 Mouse Fur

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.4.3** can be combined with **7.4.1** and **7.4.4** in a single unit about **reproduction and inheritance,** *exploring genetic mutations and genetic technologies.*	genetic, mutations, harmful, beneficial, neutral, structure, function, organism, trait, gene, DNA, environment, offspring, chromosome	• GSD 7.4.1 Reproduction and Inheritance • Teach.Genetics: Genes, Traits, & Change Over Time • Strand 7.4 SEEd Storylines • OpenSciEd: Genetics (Strand 7.4)

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Quarter 3

Strand 7.3 Structure and Function of Life | Strand 7.4 Reproduction and Inheritance

Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism.	The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.

Standard 7.4.4	3D Instructional Focus	Assessment Resources

Obtain, evaluate, and communicate information about the technologies that have changed the way humans affect the inheritance of desired traits in organisms. *Analyze data from tests or simulations to determine the best solution to achieve success* in cultivating selected desired traits in organisms. Examples could include artificial selection, genetic modification, animal husbandry, and gene therapy. (LS4.B, ETS1.A, ETS1.B, ETS1.C)
 	
**This is an engineering standard.*
	• SEP: Obtaining, Evaluating, and Communicating Information
	• CCC: Cause and Effect
	• DCI: Natural Selection
	  ○ LS4.B: In artificial selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring.
	  ○ ETS1.A, ETS1.B, ETS1.C
		RISE Benchmark Modules
		Benchmark Cluster 7.4.4
		
		USBE Formative Assessments
		7.4.4 GMO Salmon (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.4.4 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		NA

Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.4.4** can be combined with **7.4.1** and **7.4.3** in a single unit about **reproduction and inheritance,** *exploring genetic mutations and genetic technologies.*	inheritance, selective breeding, artificial selection, genetic modification, animal husbandry, gene therapy, offspring, reproduction, traits, organism, heredity, chromosome, mutation, genetic variation	• GSD 7.4.1 Reproduction and Inheritance • Teach.Genetics: Genes, Traits, & Change Over Time • Strand 7.4 SEEd Storylines • OpenSciEd: Genetics (Strand 7.4)

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Quarter 4

Strand 7.4 Reproduction and Inheritance | Strand 7.5 Changes in Species Over Time

The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.	Genetic variation and the proportion of traits within a population can change over time. Additional evidence of change over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms and in embryological development.

Standard 7.4.2🔑	3D Instructional Focus	Assessment Resources
🔑**Obtain, evaluate, and communicate information** about specific animal and plant adaptations and structures that affect the probability of successful reproduction. Examples of adaptations could include nest building to protect young from the cold, herding of animals to protect young from predators, vocalization of animals and colorful plumage to attract mates for breeding, bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury. (LS1.B)	• SEP: Obtaining, Evaluating, and Communicating Information • CCC: Structure and Function • DCI: Growth and Development of Organisms ○ LS1.B: Animals engage in characteristic behaviors that increase the odds of reproduction. Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. Genetic factors as well as local conditions affect the growth of the adult plant.	**RISE Benchmark Modules** Benchmark Cluster 7.4.2 **USBE Formative Assessments** 7.4.2 Star Orchids (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.4.2 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Standard **7.4.2** can be combined with **Strand 7.5** in a single unit about **adaptations, natural selection, and changes to species over time**, *through evaluation and exploration of evidence.*	adaptation, structure, probability, reproduction, parent, offspring, herding, vocalization, plumage, breeding, pollen, nectar, mating, organism, inherited, genetic, variation	• GSD 7.4.2 & Strand 7.5 Changes in Organisms Over Time • Strand 7.5 SEEd Storylines • OpenSciEd: Natural Selection & Common Ancestry (7.5)

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Quarter 4

Strand 7.4 Reproduction and Inheritance | Strand 7.5 Changes in Species Over Time

The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.	Genetic variation and the proportion of traits within a population can change over time. Additional evidence of change over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms and in embryological development.

Standard 7.5.1🔑	3D Instructional Focus	Assessment Resources

🔑**Construct an explanation** that describes how the genetic variation of traits in a population can affect some individuals' probability of surviving and reproducing in a specific environment. Over time, specific traits may increase or decrease in populations. Emphasize the use of proportional reasoning to support explanations of trends in changes to populations over time. Examples could include camouflage, variation of body shape, speed and agility, or drought tolerance. (LS4.B, LS4.C)	• SEP: Constructing Explanations
	• CCC: Cause and Effect
	• DCI: Natural Selection and Adaptation
	  ○ LS4.B: Natural selection leads to the predominance of certain traits in a population, and the suppression of others.
	  ○ LS4.C: Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes.
		RISE Benchmark Modules
		Benchmark Cluster 7.5.1
		
		USBE Formative Assessments
		7.5.1 Yukon Squirrels (Paper) or (Canvas)
		
		DISTRICT Benchmarks in Derivita
		Benchmarks by Standard 7.5.1 (Coming Soon!)
		
		GSD Teacher Written Sample Assessments
		7.4.3 and/or 7.5.1 Mouse Fur

Instructional Notes	Academic Vocabulary	Lesson Planning Resources
Strand 7.5 can be combined with Standard **7.4.2** in a single unit about **adaptations, natural selection, and changes to species over time**, *through evaluation and exploration of evidence.*	genetic variation, probability, environment, proportional, camouflage, variation, drought tolerance, diversity, trend, population, evolve, gene, sexual reproduction, asexual reproduction, beneficial, distribution, adaptation, frequency, natural selection	• GSD 7.4.2 & Strand 7.5 Changes in Organisms Over Time • Strand 7.5 SEEd Storylines • OpenSciEd: Natural Selection & Common Ancestry (7.5)

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Quarter 4

Strand 7.4 Reproduction and Inheritance | Strand 7.5 Changes in Species Over Time

The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.	Genetic variation and the proportion of traits within a population can change over time. Additional evidence of change over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms and in embryological development.

Standard 7.5.2🔑	3D Instructional Focus	Assessment Resources
🔑**Analyze** and interpret **data** for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. (LS4.A)	• SEP: Analyzing and Interpreting Data • CCC: Patterns • DCI: Evidence of Common Ancestry and Diversity ○ LS4.A: The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.5.2 Griffin Fossils (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.5.2 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA

Instructional Notes	Academic Vocabulary	Lesson Planning Resources
Strand 7.5 can be combined with Standard **7.4.2** in a single unit about **adaptations, natural selection, and changes to species over time**, *through evaluation and exploration of evidence.*	patterns, fossil record, diversity, extinction, natural laws, geologic, organism, ancestor, ancestry, species, evolve, trait	• GSD 7.4.2 & Strand 7.5 Changes in Organisms Over Time • Strand 7.5 SEEd Storylines • OpenSciEd: Natural Selection & Common Ancestry (7.5)

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Quarter 4

Strand 7.4 Reproduction and Inheritance | Strand 7.5 Changes in Species Over Time

The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.	Genetic variation and the proportion of traits within a population can change over time. Additional evidence of change over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms and in embryological development.

Standard 7.5.3	3D Instructional Focus	Assessment Resources
Construct explanations that describe the patterns of body structure similarities and differences between modern organisms, and between ancient and modern organisms, to infer possible evolutionary relationships. (LS4.A)	• SEP: Constructing Explanations • CCC: Patterns • DCI: Evidence of Common Ancestry and Diversity ○ LS4.A: Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.5.3 Hoplophoneus Fossils (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.5.3 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA

Instructional Notes	Academic Vocabulary	Lesson Planning Resources
Strand 7.5 can be combined with Standard **7.4.2** in a single unit about **adaptations, natural selection, and changes to species over time**, *through evaluation and exploration of evidence.*	patterns, structure, organism, ancient, evolution, ancestor, fossil record, anatomy, diversity, extinction, evolve	• GSD 7.4.2 & Strand 7.5 Changes in Organisms Over Time • Strand 7.5 SEEd Storylines • OpenSciEd: Natural Selection & Common Ancestry (7.5)

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Strand 7.4 Reproduction and Inheritance | Strand 7.5 Changes in Species Over Time

The great diversity of species on Earth is a result of genetic variation. Genetic traits are passed from parent to offspring. These traits affect the structure and behavior of organisms, which affect the organism's ability to survive and reproduce. Mutations can cause changes in traits that may affect an organism. As technology has developed, humans have been able to change the inherited traits in organisms which may impact society.	Genetic variation and the proportion of traits within a population can change over time. Additional evidence of change over time can be found in the fossil record, anatomical similarities and differences between modern and ancient organisms and in embryological development.

Standard 7.5.4	3D Instructional Focus	Assessment Resources
Analyze data to compare patterns in the embryological development across multiple species to identify similarities and differences not evident in the fully formed anatomy. (LS4.A)	• SEP: Analyzing and Interpreting Data • CCC: Patterns • DCI: Evidence of Common Ancestry and Diversity ○ LS4.A: Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy.	**RISE Benchmark Modules** NA **USBE Formative Assessments** 7.5.4 Mammal Feet (Paper) or (Canvas) **DISTRICT Benchmarks in Derivita** Benchmarks by Standard 7.5.4 (Coming Soon!) **GSD Teacher Written Sample Assessments** NA
Instructional Notes	**Academic Vocabulary**	**Lesson Planning Resources**
Strand 7.5 can be combined with Standard **7.4.2** in a single unit about **adaptations, natural selection, and changes to species over time**, *through evaluation and exploration of evidence.*	embryological, embryo, organism, development, species, anatomy, reproduce, organ, tissue, cells, traits, features	• GSD 7.4.2 & Strand 7.5 Changes in Organisms Over Time • Strand 7.5 SEEd Storylines • OpenSciEd: Natural Selection & Common Ancestry (7.5)