twig Science Pre-K Scope and Sequence

MODULE	NGSS	HEAD START PERFORMANCE STANDARDS			
1. Senses Safari Students journey through the jungle, using their five senses to explore the world around them.	**K-LS1-1, SEP-6, CCC-4, CCC-6**	**Approaches to Learning** **Lesson 1, 3, 9** P-ATL 2 **Lesson 1, 7** P-ATL 3 **Lesson 1, 2, 3, 4, 7, 9** P-ATL 4 **Lesson 2, 4, 6, 7** P-ATL 8 **Lesson 3, 6** P-ATL 9; P-ATL 12 **Lesson 1,** P-ATL 11 **Lesson 3, 9** P-ATL 13	**Language and Communication** **Lesson 1–9** P-LC 1 **Lesson 3, 5, 7** P-LC 2 **Lesson 1, 3** P-LC 3 **Lesson 3** P-LC 5 **Lesson 1, 3, 9** P-LC 6 **Lesson 3, 5, 7** P-LC 7 **Literacy** **Lesson 3, 5, 7, 8** P-LIT 3 **Lesson 3, 5** P-LIT 4; P-LIT 5; P-LIT 6	**Social and Emotional Development** **Lesson 1** P-SE 3 **Lesson 4, 7** P-SE 4 **Lesson 4** P-SE 7 **Mathematics Development** **Lesson 4, 5, 7** P-MATH 1 **Lesson 1, 7** P-MATH 2; P-MATH 3 **Lesson 7** P-MATH 9 **Lesson 4, 7** P-MATH 10	**Scientific Reasoning** **Lesson 1–6, 8** P-SCI 1 **Lesson 4, 5** P-SCI 2 **Lesson 1, 4, 5** P-SCI 3 **Lesson 3** P-SCI 4 **Lesson 1, 4** P-SCI 5 **Lesson 1, 4, 6** P-SCI 6 **Motor and Physical Development** **Lesson 2, 4** P-PMP 1 **Lesson 1, 2, 4, 6, 8** P-PMP 2 **Lesson 1, 4, 5, 7** P-PMP 3
2. How to Build a Human What are the ingredients that make up a human being? In this module, students learn about their different body parts and how they work together—before building a human of their own!	**K-LS1-1, SEP-2, CCC-4 , CCC-6**	**Approaches to Learning** **Lesson 2, 6, 7, 8** P-ATL 3 **Lesson 1, 4, 5, 8** P-ATL 4 **Lesson 1, 4, 6, 8** P-ATL 8 **Lesson 1, 2, 4, 5, 8** P-ATL 9 **Lesson 3** P-ATL 11 **Lesson 4, 6** P-ATL 13 **Literacy** **Lesson 3** P-LIT; P-LIT 5; P-LIT 6	**Language and Communication** **Lesson 1–10** P-LC 1 **Lesson 1, 3, 4, 8, 10** P-LC 2 **Lesson 8** P-LC 4 **Lesson 1, 9** P-LC 6 **Lesson 3** P-LC 7	**Mathematics Development** **Lesson 8** P-MATH 2; P-MATH 3; P-MATH 9 **Lesson 1, 8** P-MATH 10 **Scientific Reasoning** **Lesson 2, 4, 5, 7, 9** P-SCI 1 **Lesson 2w, 3, 4, 6, 9** P-SCI 2 **Lesson 7** P-SCI 3 **Lesson 2, 7, 9** P-SCI 4	**Motor and Physical Development** **Lesson 1, 4, 6, 9** P-PMP 1 **Lesson 1, 4, 5, 8, 9** P-PMP 2 **Lesson 1, 5, 7, 8, 10** P-PMP 3 **Lesson 3** P-PMP 5 **Social and Emotional Development** **Lesson 4, 8, 10** P-SE 3 **Lesson 9, 10** P-SE 4
3. Ultimate Games Day How do we use forces to play games? Students design the Ultimate Games Day using their knowledge of pushes and pulls.	**K-PS2-1, SEP-3, SEP-6, SEP-8, CCC-2**	**Approaches to Learning** **Lesson 2, 4, 8, 9** P-ATL 3 **Lesson 4, 8** P-ATL 4 **Lesson 2, 4, 5, 7, 8, 9** P-ATL 8 **Lesson 2, 9** P-ATL 9 **Lesson 2–5** P-ATL 10 **Lesson 1–3** P-ATL 11 **Lesson 4, 5, 9** P-ATL 12 **Lesson 1, 9** P-ATL 13	**Language and Communication** **Lesson 1–9** P-LC 1 **Lesson 1, 4** P-LC 2 **Lesson 9** P-LC 3 **Lesson 4** P-LC 4 **Lesson 1, 2, 9** P-LC 5 **Lesson 1, 2, 4** P-LC 6 **Lesson 1**P-LC 7 **Motor and Physical Development** **Lesson 1, 2, 4, 6, 8, 9** P-PMP 1; P-PMP 3 **Lesson 1–4, 6, 8, 9** P-PMP 2	**Social and Emotional Development** **Lesson 4, 9** P-SE 3 **Lesson 2, 4, 6, 8, 9** P-SE 4 **Lesson 7, 8** P-SE 11 **Literacy** **Lesson 1–5, 7** P-LIT 3 **Lesson 1** P-LIT 4 **Lesson 1** P-LIT 5 **Lesson 1, 3** P-LIT 6	**Mathematics Development** **Lesson 1–9** P-MATH 1 **Lesson 4** P-MATH 4 **Lesson 3, 4** P-MATH 10 **Scientific Reasoning** **Lesson 1–5, 9** P-SCI 1 **Lesson 3, 9** P-SCI 2 **Lesson 2–6** P-SCI 3 **Lesson 2, 4, 6** P-SCI 4; P-SCI 6 **Lesson 4** P-SCI 5
4. Weather Explorers Recording weather in the Arctic and at home, students examine patterns in data and investigate how weather and the seasons affect humans and animals.	**K-ESS2-1, SEP-3, CCC-1, CCC-2**	**Approaches to Learning** **Lesson 1, 5** P-ATL 2 **Lesson 1, 2, 4, 5** P-ATL 3 **Lesson 2, 8** P-ATL 4 **Lesson 1, 2, 5, 7–9** P-ATL 8 **Lesson 1, 2, 5, 7, 9 Lesson** P-ATL 9 **Lesson 1, 3–8** P-ATL 11 **Lesson 1, 2, 6, 9** P-ATL 12 **Lesson 6, 9** P-ATL 13	**Language and Communication** **Lesson 1–9 P-LC 1** **Lesson 1, 3, 7** P-LC 2 **Lesson 7, 9** P-LC 3 **Lesson 1, 6–9** P-LC 5 **Lesson 1, 3, 7** P-LC 6 **Lesson 3, 4, 6–9** P-LC 7 **Literacy** **Lesson 1, 3, 6, 8** P-LIT 3 **Lesson 3, 8** P-LIT 5; P-LIT 6	**Social and Emotional Development** **Lesson 1, 2, 5** P-SE 3 **Lesson 1** P-SE 4; P-SE 7 **Scientific Reasoning** **Lesson 1–6, 8, 9** P-SCI 1 **Lesson 4, 5** P-SCI 2; P-SCI 5 **Lesson 1–9** P-SCI 3 **Lesson 2–9** P-SCI 4 **Lesson 5, 6, 9** P-SCI 6	**Mathematics Development** **Lesson 2–9** P-MATH 1 **Lesson 9** P-MATH 2; P-MATH 3; P-MATH 4; P-MATH 10 **Motor and Physical Development** **Lesson 1, 5** P-PMP 1 **Lesson 1, 4, 5** P-PMP 2 **Lesson 1–9** P-PMP 3 **Lesson 1** P-PMP 6
5. Shipwreck Island Students find themselves washed up on a tropical island! They'll need to work together to complete a number of design and engineering tasks before they can make their escape.	**K-2-ETS1-2, K-2-ETS1-3, SEP-1, SEP-3, SEP-4, CCC-1**	**Approaches to Learning** **Lesson 1** P-ATL 2 **Lesson 1–6, 8–10** P-ATL 3 **Lesson 1, 2, 4–6, 8–10** P-ATL 4; P-ATL 8; P-ATL 9 **Lesson 9** P-ATL 7; P-ATL 10 **Lesson 2, 7** P-ATL 11 **Lesson 1, 2, 9** P-ATL 12 **Lesson 4, 6, 8, 9** P-ATL 13	**Language and Communication** **Lesson 1–10** P-LC 1 **Lesson 4, 7–9** P-LC 2 **Lesson 9** P-LC 3 **Lesson 1–4, 7–10** P-LC 5 **Lesson 1, 5, 7–10** P-LC 6 **Lesson 1–3, 6, 7, 9, 10** P-LC 7 **Motor and Physical Development** **Lesson 1, 5, 6, 8, 10** P-PMP 1 **Lesson 1, 2, 4–6, 8–10** P-PMP 2; P-PMP 3 **Lesson 3** P-PMP 4; P-PMP 6	**Social and Emotional Development** **Lesson 2–10** P-SE 3 **Lesson 4–6, 9, 10** P-SE 4 **Scientific Reasoning** **Lesson 1–8, 10** P-SCI 1 **Lesson 4–6, 8, 10** P-SCI 2 **Lesson 1, 2, 4–6, 8, 10** P-SCI 3 **Lesson 1, 4–8, 10** P-SCI 4 **Lesson 4–6, 8, 10** P-SCI 5 **Lesson 1, 4–6, 8, 10** P-SCI 6	**Mathematics Development** **Lesson 5, 6** P-MATH 1 **Lesson 6** P-MATH 2; P-MATH 3; P-MATH 4; P-MATH 5 **Lesson 9** P-MATH 9 **Lesson 1, 4, 6, 8, 10** P-MATH 10 **Literacy** **Lesson 2, 3, 5–7, 10** P-LIT 3 **Lesson 3, 7** P-LIT 4 **Lesson 3, 7** P-LIT 5 **Lesson 2, 3, 5, 7** P-LIT 6
6. Life on a Farm Students explore what lives on a farm and investigate how we can grow plants to provide us with food. As new animals are born on the farm, students learn about the different stages of life cycles.	**K-LS1-1, K-ESS3-1, SEP-2, SEP-8, CCC-1, CCC-4**	**Approaches to Learning** **Lesson 3–7, 9** P-ATL 2 **Lesson 3–7** P-ATL 3 **Lesson 1–5, 7, 9** P-ATL 4 **Lesson 1** P-ATL 7 **Lesson 5, 7** P-ATL 8 **Lesson 5** P-ATL 9 **Lesson 1–4, 6** P-ATL 11 **Lesson 1, 4, 5, 7** P-ATL 12 **Lesson 1, 5, 7–9** P-ATL 13	**Language and Communication** **Lesson 1–9** P-LC 1 **Lesson 2, 4–6** P-LC 2 **Lesson 1, 4, 5, 8** P-LC 3 **Lesson 3, 6, 7** P-LC 5 **Lesson 2, 4, 6** P-LC 6 **Lesson 2, 4, 9** P-LC 7 **Social and Emotional Development** **Lesson 1, 7** P-SE 3 **Lesson 5, 7, 9** P-SE 4 **Lesson 3–7** P-SE 7	**Literacy** **Lesson 2, 4, 6, 9** P-LIT 3 **Lesson 2, 6** P-LIT 5 **Lesson 2, 4, 6** P-LIT 6 **Motor and Physical Development** **Lesson 1, 5, 7–9** P-PMP 1 **Lesson 3–9** P-PMP 2 **Lesson 2–4, 8,9** P-PMP 3 **Lesson 8** P-PMP 5 **Lesson 4, 7** P-PMP 6	**Mathematics Development** **Lesson 3–8** P-MATH 9 **Scientific Reasoning** **Lesson 1– 8** P-SCI 1 **Lesson 2, 6, 8** P-SCI 2 **Lesson 1, 2, 4–8** P-SCI 3 **Lesson 1, 3, 6** P-SCI 4 **Lesson 3–8** P-SCI 5 **Lesson 8** P-SCI 6
7. Ocean Deep How do humans impact the environment in our oceans? Students dive under the water and investigate the ecosystems that are affected by human behavior.	**K-ESS3-3, SEP-2, SEP-3, CCC-2**	**Approaches to Learning** **Lesson 7, 9** P-ATL 2 **Lesson 1, 2, 5, 7–9** P-ATL 3 **Lesson 5, 7–9** P-ATL 4 **Lesson 2, 7** P-ATL 7 **Lesson 2, 7–9** P-ATL 8 **Lesson 1, 4, 7, 9** P-ATL 9 **Lesson 7, 9** P-ATL 10 **Lesson 1–9** P-ATL 11 **Lesson 2, 6, 7, 9** P-ATL 12 **Lesson 2, 4, 9** P-ATL 13	**Language and Communication** **Lesson 1–9** P-LC 1 **Lesson 1, 3, 5, 6, 8** P-LC 2 **Lesson 2, 4, 8, 9** P-LC 3 **Lesson 3, 4, 6, 7, 9** P-LC 5 **Lesson 3, 5, 6, 9** P-LC 6 **Lesson 1, 3, 5, 6** P-LC 7 **Literacy** **Lesson 1, 3–6** P-LIT 3 **Lesson 3, 6** P-LIT 5 **Lesson 3, 6, 9** P-LIT 6	**Social and Emotional Development** **Lesson 1, 2, 4, 5, 7–9** P-SE 3; P-SE 4 **Lesson 4, 5, 9** P-SE 7 **Lesson 8, 9** P-SE 11 **Motor and Physical Development** **Lesson 1, 3, 4** P-PMP 1 **Lesson 1, 4, 5, 7–9** P-PMP 2 **Lesson 1, 2, 5, 7–9** P-PMP 3 **Lesson 8** P-PMP 6	**Scientific Reasoning** **Lesson 1–7, 9** P-SCI 1 **Lesson 2, 3 9** P-SCI 2 **Lesson 1–6, 9** P-SCI 3 **Lesson 1, 5–7** P-SCI 4 **Lesson 4, 5, 7** P-SCI 5 **Lesson 1, 4, 5, 7** P-SCI 6 **Mathematics Development** **Lesson 1** P-MATH 1; P-MATH 2; P-MATH 3; P-MATH 4; P-MATH 10
8. Space Race Students explore what they can see in the sky at nighttime and during the day before blasting off into space for an intergalactic adventure.	**SEP-2, SEP-6, CCC-3, CCC-4**	**Approaches to Learning** **Lesson 2, 3** P-ATL 2 **Lesson 1, 3–6** P-ATL 3 **Lesson 1, 5** P-ATL 4 **Lesson 3** P-ATL 7 **Lesson 3–5, 7** P-ATL 8 **Lesson 3–5** P-ATL 9 **Lesson 4, 7** P-ATL 10 **Lesson 1, 3–5** P-ATL 11 **Lesson 4, 5, 7** P-ATL 12 **Lesson 3–5** P-ATL 13	**Language and Communication** **Lesson 1–7** P-LC 1 **Lesson 1, 2, 4, 6, 7** P-LC 2 **Lesson 1, 4, 7** P-LC 3 **Lesson 2** P-LC 4 **Lesson 5, 7** P-LC 5 **Lesson 2, 4, 5** P-LC 6 **Lesson 2, 5, 6** P-LC 7 **Social and Emotional Development** **Lesson 4, 5, 7** P-SE 3 **Lesson 4, 5** P-SE 4	**Literacy** **Lesson 2, 5, 6** P-LIT 3 **Lesson 2, 6** P-LIT 5 **Lesson 2, 3, 6, 7** P-LIT 6 **Mathematics Development** **Lesson 4** P-MATH 1; P-MATH 2 **Lesson 2** P-MATH 4; P-MATH 8 **Lesson 1, 4** P-MATH 9 **Lesson 1, 3, 4, 7** P-MATH 10	**Scientific Reasoning** **Lesson 1–7** P-SCI 1 **Lesson 2–4** P-SCI 2 **Lesson 1, 2, 6** P-SCI 3 **Lesson 1, 3, 5** P-SCI 4 **Lesson 3, 5** P-SCI 5 **Motor and Physical Development** **Lesson 2, 3, 5** P-PMP 1 **Lesson 1, 3–5** P-PMP 2 **Lesson 1, 3–5, 7** P-PMP 3 **Lesson 1, 3** P-PMP 6

twig Science | NEXT GEN Grade K Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: My Big Nature Adventure **NGSS Topic Arrangements: Interdependent Relationships in Ecosystems** 	Different plants and animals live in different places.	Hold on tight—you're going on an adventure! In this module, students travel the world looking at different environments—including deserts, grasslands, cities, and even their very own schoolyard. They observe some of the plants and animals that live in these places, and discover that each environment provides living things with everything they need to survive. Through hands-on exploration, videos, and books, students also learn that all living things share the same basic needs—whether you're a plant, a human, or a dung beetle!	**K-LS1-1** Use observations to describe patterns of what plants and animals (including humans) need to survive. **K-ESS3-1** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places in which they live.
2: Marble Run Engineer **NGSS Topic Arrangements: Forces and Interactions; Engineering Design** 	What happens when we push, pull, and drop objects? How can we change their speed and direction?	In this module, students become Marble Run Engineers. They explore forces by observing and analyzing what happens when they push and pull different objects. They use tools to alter and measure how far they can push a marble, and how precisely they can control its direction. Finally, students put all their knowledge into practice by designing, building, observing, and analyzing fun (and functional!) marble run tracks. Let's roll!	**K-PS2-1** Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. **K-PS2-2** Analyze data to determine whether a design solution works as intended to change the speed or direction of an object with a push or a pull.* **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.
3: Be Prepared **NGSS Topic Arrangements: Weather and Climate; Engineering Design** 	How do we observe weather and collect data to describe weather patterns over time?	What's the weather like? In this module, students find out by becoming amateur meteorologists! They observe weather patterns, learn to interpret weather forecasts, and use their knowledge to prepare for whatever the weather throws at them. Students explore the importance of staying protected from the Sun, build their own mini-umbrellas, and find out how meteorologists make and share their predictions about the weather. Finally, they create weather forecasts of their own—because whatever the weather, it pays to be prepared!	**K-ESS2-1** Use and share observations of local weather conditions to describe patterns over time. **K-ESS3-2** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* **K-PS3-1** Make observations to determine the effect of sunlight on the Earth's surface. **K-PS3-2** Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K–2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
4: I Can **NGSS Topic Arrangements: Interdependent Relationships in Ecosystems** 	How can I protect the environment from changes that harm it?	Animals can, plants can—and I can! In this module, students discover how living things can change their environments to meet their basic needs. Using videos and texts, students explore examples, such as earthworms, beavers, and trees, and consider the positive and negative impacts of the changes they make. Students consider how humans can change the environment too—how we can harm it, and how we can protect it. Finally, students identify one way they can help to protect the natural world, and invite other students to do the same.	**K-ESS2-2** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. **K-ESS3-3** Communicate solutions that will reduce the impact of humans on land, water, air, and/or other living things in the local environment.* **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, and Multiple Choice Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-4 Systems and System Models
CCC-7 Stability and Change

Disciplinary Core Ideas
LS1.C Organization for Matter and Energy Flow in Organisms
ESS3.A Natural Resources

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems

Common Core English Language Arts
RI.K.1–3 Key Ideas and Details
RI.K.4–6 Craft and Structure
RI.K.7–8 Integration of Knowledge and Ideas
RI.K.10 Range of Reading and Level of Text Complexity
L.K.5–6 Vocabulary Acquisition and Use
RF.K.1 Print Concepts
RF.K.3 Phonics and Word Recognition
RF.K.4 Fluency
SL.K.1–3 Comprehension and Collaboration
SL.K.4, 6 Presentation of Knowledge and Ideas
W.K.2 Text Types and Purposes
W.K.7–8 Research to Build and Present Knowledge

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

Common Core Math
K.G.A Identify and describe shapes
K.MD.A Describe and compare measurable attributes
K.MD.B Classify objects and count the number of objects in each category
MP5 Use appropriate tools strategically
MP6 Attend to precision
MP7 Look for and make use of structure

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect

Disciplinary Core Ideas
PS2.A Forces and Motion
PS2.B Types of Interactions
PS3.C Relationship Between Energy and Forces

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting an Engineering Problem

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.K.1–3 Key Ideas and Details
RI.K.7–8 Integration of Knowledge and Ideas
RI.K.10 Range of Reading and Level of Text Complexity
L.K.6 Vocabulary Acquisition and Use
RF.K.1 Print Concepts
RF.K.3 Phonics and Word Recognition
RF.K.4 Fluency
SL.K.1–3 Comprehension and Collaboration
SL.K.4–6 Presentation of Knowledge and Ideas
W.K.2–3 Text Types and Purposes
W.K.5 Production and Distribution of Writing
W.K.8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
K.CC.A Know number names and the count sequence
K.CC.B Count to tell the number of objects
K.MD.A Describe and compare measurable attributes
K.MD.B Classify objects and count the number of objects in each category
K.OA.A Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from
MP1 Make sense of problems and persevere in solving them
MP2 Reason abstractly and quantitatively
MP3 Construct viable arguments and critique the reasoning of others
MP4 Model with mathematics
MP5 Use appropriate tools strategically
MP6 Attend to precision
MP7 Look for and make use of structure
MP8 Look for and express regularity in repeated reasoning

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-6 Structure and Function

Disciplinary Core Ideas
PS3.B Conservation of Energy and Energy Transfer
ESS2.D Weather and Climate
ESS3.B Natural Hazards

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting an Engineering Problem
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems

Common Core English Language Arts
RI.K.1–3 Key Ideas and Details
RI.K.4 Craft and Structure
RI.K.7–8 Integration of Knowledge and Ideas
RI.K.10 Range of Reading and Level of Text Complexity
L.K.6 Vocabulary Acquisition and Use
RF.K.1 Print Concepts
RF.K.4 Fluency
SL.K.1–3 Comprehension and Collaboration
SL.K.4–6 Presentation of Knowledge and Ideas
W.K.2 Text Types and Purposes
W.K.8 Research to Build and Present Knowledge

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Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
K.CC.A Know number names and the count sequence
K.CC.B Count to tell the number of objects
K.CC.C Compare numbers
K.G.A Identify and describe shapes
K.MD.B Classify objects and count the number of objects in each category
K.OA.A Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from
MP1 Make sense of problems and persevere in solving them
MP2 Reason abstractly and quantitatively
MP3 Construct viable arguments and critique the reasoning of others
MP5 Use appropriate tools strategically
MP7 Look for and make use of structure
MP8 Look for and express regularity in repeated reasoning

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models

Disciplinary Core Ideas
ESS2.E Biogeology
ESS3.A Natural Resources
ESS3.C Human Impacts on Earth Systems

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting an Engineering Problem
ETS1.B Developing Possible Solutions

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.K.1–3 Key Ideas and Details
RI.K.4 Craft and Structure
RI.K.7–9 Integration of Knowledge and Ideas
RI.K.10 Range of Reading and Level of Text Complexity
L.K.6 Vocabulary Acquisition and Use
RF.K.1 Print Concepts
RF.K.3 Phonics and Word Recognition
RF.K.4 Fluency
RL.K.1 Key Ideas and Details
RL.K.10 Range of Reading and Level of Text Complexity
SL.K.1–3 Comprehension and Collaboration
SL.K.4–6 Presentation of Knowledge and Ideas
W.K.1–2 Text Types and Purposes
W.K.8 Research to Build and Present Knowledge

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Standard 1: Social and Instructional Language
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Speaking, Listening, Reading, Writing

Common Core Math
K.MD.A Describe and compare measurable attributes
K.CC.A Know number names and the count sequence
K.CC.C Compare numbers
MP1 Make sense of problems and persevere in solving them
MP3 Construct viable arguments and critique the reasoning of others

twig Science | NEXT GEN Grade 1 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: Museum of Leafology **NGSS Topic Arrangements: Structure, Function, and Information Processing; Engineering Design** 	How are all plants alike and how are they different?	Over the course of the module, students become scientists and curators, creating a Museum of Leafology. Full of different "rooms," the Museum exhibits fascinating things students learn about plants. Students explore plants through hands-on activities like outdoor nature explorations and growing their own seedlings. They investigate different parts of plants, and design and build an invention inspired by plants to solve school problems. At the module's close, students invite their friends and family to visit the Museum. Finally, the class prepares a celebratory (and delicious!) salad made of different parts of a plant.	**1-LS1-1** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* **1-LS3-1** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K–2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
2: Animal Reporters **NGSS Topic Arrangements: Waves; Structure, Function, and Information Processing; Engineering Design** 	How do animals use their body parts, communicate with their young, and make sounds?	Students grab their notepads and take on the role of Animal Reporters, embarking on a global quest to observe different animals. On their journey they discover how animals use their body parts and how young animals are similar to and different from their parents. Students learn about sound, finding out how animals communicate with each other. Finally, they are challenged to design and build their own communication devices, discovering how they too can use sounds to communicate over long distances. Over the course of the module, these intrepid Animal Reporters record and present their findings in preparation for their final written articles.	**1-LS1-2** Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. **1-LS3-1** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. **1-PS4-1** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. **1-PS4-4** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.* **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
3: Shadow Town **NGSS Topic Arrangements: Waves** 	Why is the town of Rjukan in a shadow?	Let's go to Shadow Town! The town of Rjukan, in Norway, spends half the year with no direct sunlight. But why? Over the course of the module, students explore light, shadows, and reflection. They create shadow puppets to tell stories of life in Rjukan and experiment with reflective surfaces. Finally, they come up with ideas to solve Rjukan's problem and compare these with the incredible real-life solution—Rjukan's residents built giant mirrors to redirect sunlight into their town square.	**1-PS4-2** Make observations to construct an evidence-based account that objects can be seen only when illuminated. **1-PS4-3** Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
4: Patterns in the Sky **NGSS Topic Arrangements:** Space Systems 	What patterns do we observe in the sky?	The sky is full of amazing patterns, formed by a rich tapestry of celestial objects like the Sun and Moon. Can we use these patterns to make predictions? In this module, students become junior astronomers, using naked-eye observations, creating models, and watching videos to observe and collect data on phenomena that affect us every day. They explore the way the Sun and Moon appear to move across the sky and create posters that document all they have learned.	**1-ESS1-1** Use observations of the Sun, Moon, and Stars to describe patterns that can be predicted. **1-ESS1-2** Make observations at different times of year to relate the amount of daylight to the time of year.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, and Multiple Choice Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 Systems and System Models
CCC-6 Structure and Function
CCC-7 Stability and Change

Disciplinary Core Ideas
LS1.A Structure and Function
LS1.B Growth and Development of Organisms
LS1.D Information Processing
LS3.A Inheritance of Traits
LS3.B Variation of Traits

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting Engineering Problems

Engineering, Technology, and Applications of Science (continued)
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Math and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle III Natural systems change in ways that people benefit from and can influence

Common Core English Language Arts
L.1.4–5 Vocabulary Acquisition and Use
RI.1.1–3 Key Ideas and Details
RI.1.5–6 Craft and Structure
RI.1.7 Integration of Knowledge and Ideas
SL.1.1–3 Comprehension and Collaboration
SL.1.4–6 Presentation of Knowledge and Ideas
W.1.7–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
1.MD.A Measure lengths indirectly and by iterating length units
1.MD.C Represent and interpret data
MP7 Look for and make use of structure

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 Systems and System Models
CCC-6 Structure and Function

Disciplinary Core Ideas
LS1.A Structure and Function
LS1.B Growth and Development of Organisms
LS1.D Information Processing
LS3.A Inheritance of Traits
LS3.B Variation of Traits
PS4.A Wave Properties
PS4.C Information Technologies and Instrumentation

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.1.1–3 Key Ideas and Details
RI.1.4–5 Craft and Structure
RI.1.7–8 Integration of Knowledge and Ideas
SL.1.1–3 Comprehension and Collaboration
SL.1.4–5 Presentation of Knowledge and Ideas
W.1.2 Text Types and Purposes
W.1.5 Production and Distribution of Writing
W.1.8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
1.MD.A Measure lengths indirectly and by iterating length units
1.MD.C Represent and interpret data
1.NBT.A Extend the counting sequence
1.NBT.B Understand place value
MP2 Reason abstractly and quantitatively
MP5 Use appropriate tools strategically
MP7 Look for and make use of structure

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect

Disciplinary Core Ideas
PS4.B Electromagnetic Radiation

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
L.1.5–6 Vocabulary Acquisition and Use
RI.1.1–3 Key Ideas and Details
RI.1.5 Craft and Structure
RI.1.7–9 Integration of Knowledge and Ideas
RL.1.1–3 Key Ideas and Details
RL.1.4 Craft and Structure
RL.1.7 Integration of Knowledge and Ideas
SL.1.1–3 Comprehension and Collaboration
SL.1.4–6 Presentation of Knowledge and Ideas
W.1.3 Text Types and Purposes
W.1.7–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
1.MD.A Measure lengths indirectly and by iterating length units
1.MD.C Represent and interpret data
1.G.A Reason with shapes and their attributes

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity

Disciplinary Core Ideas
PS4.B Electromagnetic Radiation
ESS1.A The Universe and Its Stars
ESS1.B Earth and the Solar System

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts Principle III Natural systems change in ways that people benefit from and can influence

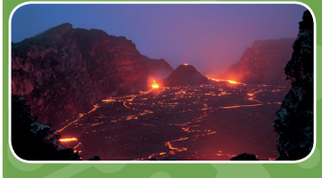
Common Core English Language Arts
RF.1.4 Fluency
RI.1.1, 3 Key Ideas and Details
RI.1.4 Craft and Structure
RI.1.7–8 Integration of Knowledge and Ideas
RI.1.10 Range of Reading and Level of Text Complexity
SL.1.1–3 Comprehension and Collaboration
SL1.4–5 Presentation of Knowledge and Ideas
W.1.1–2 Text Types and Purposes
W.1.8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
1.MD.A Measure lengths indirectly and by iterating length units
1.MD.B Tell and write time
1.MD.C Represent and interpret data
1.G.A Reason with shapes and their attributes

twig Science | NEXT GEN Grade 2 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: My Journey West **NGSS Topic Arrangements: Earth's Systems** 	How can we understand and describe the land and water on Earth?	It's time to hit the road! Students uncover a time capsule buried in the 1930s by seven-year-old Ruthie, detailing her family's journey across the United States. Through diary entries, videos, images, and audio clips, students follow Ruthie from the dust bowl of Oklahoma to her new life in California, learning about the landscape on the way. Students explore the amazing landforms she passes through, and build model landscapes out of clay. They find out how water influences the physical environment, and learn about what maps look like and how they are used.	**2-ESS2-2** Develop a model to represent the shapes and kinds of land and bodies of water in an area. **2-ESS2-3** Obtain information to identify where water is found on Earth and that it can be solid or liquid.
2: Master of Materials **NGSS Topic Arrangements: Structure and Properties of Matter; Engineering Design** 	How can we describe materials as different from one another and understand how their properties relate to their use?	Students work through a series of levels and unlock badges to become "Masters of Materials." They progress from Junior Researchers, who can describe, compare and sort materials, to Professors of Properties, who use what they've learned to design and build bridges. They also become engineers by building and testing towers, and discover how the properties of materials can change by making their own crayons. Only when all five levels are complete will students be able to call themselves Masters!	**2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. **2-PS1-2** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* **2-PS1-3** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. **2-PS1-4** Construct an argument with evidence that some changes in matter, caused by mixing, heating, or cooling can be reversed and some cannot. **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K–2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
3: Save the Island **NGSS Topic Arrangements: Earth's Systems; Engineering Design** 	How do natural processes shape the Earth?	The world is changing all around us. Sometimes this puts communities at risk, so scientists and engineers work hard to protect us—whether it's finding ways to hold back floods, or stopping beaches disappearing from right before our eyes. In this module, students investigate the fast and slow ways that landforms change, discover some of the engineering solutions used to slow down or prevent erosion, and apply what they've learned to the island of Tangier in Virginia. Tangier is at risk of disappearing beneath the waves as a result of coastal erosion—can your students come up with ideas to help?	**2-ESS1-1** Use information from several sources to provide evidence that Earth events can occur quickly or slowly. **2-ESS2-1** Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
4: A Garden for Life **NGSS Topic Arrangements: Interdependent Relationships in Ecosystems; Engineering Design** 	How do living things in an environment depend on one another and what do they need to grow?	Students create a habitat for plants and animals, by planning and building a school garden! They explore the concept of biodiversity, plan and carry out investigations into what plants need to grow, and use their findings to inform their garden designs. Students also discover the way flowering plants and pollinators such as bees depend on each other, and model the process of pollination in the classroom. Using their new knowledge, students ensure their garden will be the perfect place for pollinators and plants to live and thrive. Let it grow!	**2-LS2-1** Plan and conduct an investigation to determine if plants need sunlight and water to grow. **2-LS2-2** Develop a simple model that mimics the function of an animal when dispersing seeds or pollinating plants.* **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats. **K–2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K–2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, and Multiple Choice Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Row 1

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity

Disciplinary Core Ideas
ESS2.B Plate Tectonics and Large-Scale System Interactions
ESS2.C The Roles of Water in Earth's Surface Processes

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems

Common Core English Language Arts
RI.2.1, 3 Key Ideas and Details
RI.3.4–6 Craft and Structure
RI.2.7–9 Integration of Knowledge and Ideas
RI.2.10 Range of Reading and Level of Text Complexity
L.2.6 Vocabulary Acquisition and Use
SL.2.1–3 Comprehension and Collaboration
SL.2.4–5 Presentation of Knowledge and Ideas
W.2.2 Text Types and Purposes
W.2.5 Production and Distribution of Writing
W.2.7 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
2.G.A Reason with shapes and their attributes
2.MD.A Measure and estimate lengths in standard units
2.MD.D Represent and interpret data
2.NBT.A Understand place value
MP5 Use appropriate tools strategically
MP7 Look for and make use of structure

Row 2

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-5 Energy and Matter
CCC-6 Structure and Function

Disciplinary Core Ideas
PS1.A Structure and Properties of Matter
PS1.B Chemical Reactions

Engineering, Technology, and Applications of Science
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems

Common Core English Language Arts
RI.2.1, 3 Key Ideas and Details
RI.3.5, 6 Craft and Structure
RI.2.9 Integration of Knowledge and Ideas
L.2.4–6 Vocabulary Acquisition and Use
RL..2.1 Key Ideas and Details
RL.2.10 Range of Reading and Level of Text Complexity
SL.2.1–3 Comprehension and Collaboration
SL.2.4–6 Presentation of Knowledge and Ideas
W.2.2 Text Types and Purposes
W.2.5 Production and Distribution of Writing
W.2.7–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
2.G.A Reason with shapes and their attributes
2.MD.D Represent and interpret data
2.NBT.A Understand place value
2.NBT.B Use place value understanding and properties of operations to add and subtract
2.OA.B Add and subtract within 20
MP1 Make sense of problems and persevere in solving them
MP4 Model with mathematics
MP7 Look for and make use of structure

Row 3

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-3 Scale, Proportion and Quantity
CCC-6 Structure and Function
CCC-7 Stability and Change

Disciplinary Core Ideas
ESS1.C The History of Planet Earth
ESS2.A Earth Materials and Systems

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting an Engineering Problem
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.2.1–3 Key Ideas and Details
RI.3.4–6 Craft and Structure
RI.2.7–8 Integration of Knowledge and Ideas
RI.2.10 Range of Reading and Level of Text Complexity
L.2.6 Vocabulary Acquisition and Use
SL.2.1–3 Comprehension and Collaboration
SL.2.4–6 Presentation of Knowledge and Ideas
W.2.1–2 Text Types and Purposes
W.2.7–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math:
2.MD.C Work with time and money
2.NBT.A Understand place value
MP1 Make sense of problems and persevere in solving them
MP2 Reason abstractly and quantitatively
MP3 Construct viable arguments and critique the reasoning of others

Row 4

Crosscutting Concept
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-6 Structure and Function

Disciplinary Core Ideas
LS2.A Interdependent Relationships in Ecosystems
LS4.D Biodiversity and Humans

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting an Engineering Problem
ETS1.B Developing Possible Solutions

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle III Natural systems change in ways that people benefit from and can influence

Common Core English Language Arts
RI.2.1–2 Key Ideas and Details
RI.2.6 Craft and Structure
RI.2.7 Integration of Knowledge and Ideas
RI.2.10 Range of Reading and Level of Text Complexity
L.2.6 Vocabulary Acquisition and Use
SL.2.1–3 Comprehension and Collaboration
SL.2.4–6 Presentation of Knowledge and Ideas
W.2.1–2 Text Types and Purposes
W.2.8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
2.G.A Reason with shapes and their attributes
2.MD.A Measure and estimate lengths in standard units
2.MD.D Represent and interpret data
MP4 Model with mathematics

twig Science | NEXT GEN Grade 3 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS* (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: The Ultimate Playground **NGSS Topic Arrangements: Forces and Interactions; Engineering Design** 	How are objects affected by the forces of push and pull?	Students investigate forces and use what they learn to design the most incredible playground ever, with everything from swings and slides to fairground attractions to roller coasters! Through hands-on investigations, texts, and videos, students learn how forces make things move—whether it's making carousels spin or skydivers fall. They investigate how magnets can exert a force without contact, build their own model swings and dumbbells, and even take part in games of tug-of-war. Hold on tight—it's going to be quite a ride!	**3-PS2-1** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. **3-PS2-2** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. **3-PS2-3** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. **3-PS2-4** Define a simple design problem that can be solved by applying ideas involving magnets.* **3–5-ETS1-1** Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare possible solutions to a problem based on how well each it likely to meet the criteria and constraints of the problem. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
2: Welcome to the Biodome **NGSS Topic Arrangements: Inheritance and Variation of Traits** 	How do plants' and animals' life cycles help them to survive?	Can't visit the rain forest? Then let the rain forest come to you! Students join the Biodome—a state-of-the-art greenhouse that mimics a tropical rain forest environment—and discover the wide variety of life that rain forests contain. They look after plants in the Biodome's nursery, and nurture and observe real butterflies throughout their life cycle. Students also study the life cycles of other organisms, and look at the traits that animals of the same species share and inherit. There's a lot to explore—out there, and in here!	**3-LS1-1** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction and death. **3-LS3-1** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. **3-LS4-2** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates and reproducing. **3-LS2-1** Construct an argument that some animals form groups that help members survive.
3: How to Survive an Ice Age **NGSS Topic Arrangements: Interdependent Relationships in Ecosystems** 	What is the relationship between an organism and its environment?	Students take a trip thousands of years back in time, to see what the American landscape was like during the last Ice Age. They discover mammoths, saber-toothed cats, and more, and ask the question: Why did some plants and animals go extinct at the end of the last Ice Age, while others survived? Students investigate how environments affect the organisms living in them by planting their own seeds and varying the environmental conditions. They also consider the specific traits that help organisms survive in their environment.	**3-LS3-2** Use evidence to support the explanation that traits can be influenced by the environment. **3-LS4-1** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. **3-LS4-3** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. **3-LS4-4** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.* **3–5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
4: Weather Warning HQ **NGSS Topic Arrangements: Weather and Climate** 	What is the weather like around the world?	Students become experts in weather and climate by answering calls to Weather Warning HQ. Set up to help people in the local community, Weather Warning HQ handles all kinds of queries—from when to hold an outdoor gala event, to which time of year is best for a jungle expedition. Students find the answers by using weather tools, examining weather and climate data, and making observations. They explore local weather conditions and weather patterns around the world, and help shape a public awareness campaign about the risks associated with lightning.	**3-ESS2-1** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. **3-ESS2-2** Obtain and combine information to describe climates in different regions of the world. **3-ESS3-1** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* **3–5-ETS1-1** Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each it likely to meet the criteria and constraints of the problem.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, Multiple Choice Assessment, and Benchmark Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Module 1

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-4 Systems and System Models

Disciplinary Core Ideas
PS2.A Forces and Motion
PS2.B Types of Interactions

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.3.1, 3 Key Ideas and Details
RI.3.8 Integration of Knowledge and Ideas
L.3.6 Vocabulary Acquisition and Use
SL.3.1, 3 Comprehension and Collaboration
SL.3.4–5 Presentation of Knowledge/Ideas
W.3.1–2 Text Types and Purposes
W.3.8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
3.MD.B Represent and interpret data
MP1 Make sense of problems and persevere in solving them
MP2 Reason abstractly and quantitatively
MP4 Model with mathematics
MP5 Use appropriate tools strategically
MP6 Attend to precision

Module 2

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect

Disciplinary Core Ideas
LS1.B Growth and Development of Organisms
LS2.D Social Interactions and Group Behavior
LS3.A Inheritance of Traits
LS3.B Variation of Traits
LS4.B Natural Selection

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems

Common Core English Language Arts
RI.3.1–3 Key Ideas and Details
RI.3.4–6 Craft and Structure
RI.3.7, 9 Integration of Knowledge/Ideas
L.3.1–2 Conventions of Standard English
L.3.6 Vocabulary Acquisition and Use
SL.3.1–3 Comprehension and Collaboration
SL.3.5 Presentation of Knowledge and Ideas
W.3.1–2 Text Types and Purposes
W.3.4 Production and Distribution of Writing
W.3.7–8 Research to Build and Present Knowledge
W.3.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
3.MD.A Solve problems involving measurement and estimation
3.MD.B Represent and interpret data
3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic
MP1 Make sense of problems and persevere in solving them.
MP3 Construct viable arguments and critique the reasoning of others
MP7 Look for and make use of structure

Module 3

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 Systems and System Models
CCC-6 Structure and Function

Disciplinary Core Ideas
LS2.C Ecosystem Dynamics, Functioning, and Resilience
LS3.A Inheritance of Traits
LS3.B Variation of Traits
LS4.B Natural Selection
LS4.A Evidence of Common Ancestry and Diversity
LS4.C Adaptation
LS4.D Biodiversity and Humans

Engineering, Technology, and Applications of Science
ETS1.B Developing Possible Solutions

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts:
RI.3.1–3 Key Ideas and Details
RI.3.5 Craft and Structure
RI.3.7–9 Integration of Knowledge and Ideas
RI.3.10 Range of Reading and Level of Text Complexity
L.3.4, 6 Vocabulary Acquisition and Use
SL.3.1–3 Comprehension and Collaboration
SL.3.4–5 Presentation of Knowledge/Ideas
W.3.1–2 Text Types and Purposes
W.3.5 Production and Distribution of Writing
W.3.7–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
3.MD.A Solve problems involving measurement and estimation.
3.MD.B Represent and interpret data.
3.MD.C Geometric measurement
MP2 Reason abstractly and quantitatively
MP4 Model with mathematics
MP5 Use appropriate tools strategically

Module 4

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect

Disciplinary Core Ideas
ESS2.D Weather and Climate
ESS3.B Natural Hazards

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting Engineering Problems
ETS1.B Developing Possible Solutions

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.3.1–3 Key Ideas and Details
RI.3.7, 9 Integration of Knowledge and Ideas
RI.3.10 Range of Reading and Level of Text Complexity
L.3.6 Vocabulary Acquisition and Use
SL.3.1–3 Comprehension and Collaboration
SL.3.4–6 Presentation of Knowledge and Ideas
W.3.7–8 Research to Build and Present Knowledge
W.3.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
3.MD.B Represent and interpret data.
3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic
MP2 Reason abstractly and quantitatively
MP4 Model with mathematics
MP6 Attend to precision
MP7 Look for and make use of structure

twig Science | NEXT GEN Grade 4 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: Egg Racers **NGSS Topic Arrangements: Energy; Engineering Design** 	What happens to energy when objects collide?	Crash! Bang! Wham! Students learn about collisions, impacts and safety when they design and build their own race cars with a little help from our cartoon friend, Egg. But can they design and build a car that is safe enough to crash without breaking the egg inside? To do that, students will first have to understand what happens to energy when objects collide, what kinetic energy is, and how shock absorption works.	**4-PS3-1** Use evidence to construct an explanation relating the speed of an object to the energy of that object. **4-PS3-3** Ask questions and predict outcomes about the changes in energy that occur when objects collide. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
2: Sparks Energy, Inc. **NGSS Topic Arrangements: Energy; Engineering Design** 	How do people produce and transfer energy for their use?	This is a newsflash! Sparks Energy, Inc. is recruiting intrepid reporters to investigate the energy needs of the United States and beyond. While working as science journalists, students learn about energy sources, discover how people use energy, and find out what impact this has on the environment. They work in teams to research the facts and figures, carry out investigations and interviews, and update their reports as new information comes in. The module ends with students using their knowledge and expertise to write an exclusive article for the Sparks Energy, Inc. website.	**4-ESS3-1** Obtain and combine information to explain that energy and fuels are derived from natural resources and their uses affect the environment. **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. **4-PS3-4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.* **3–5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3: Time-Traveling Tour Guides **NGSS Topic Arrangements: Earth's Systems** 	How have weathering and erosion sculpted some of Earth's most interesting landscapes?	What would you see if you traveled millions of years back in time? In this module, students become Time-Traveling Tour Guides and, with the help of videos and 360-degree imagery, discover how the Grand Canyon was formed. They observe fossils, investigate the effects of wind and water erosion on the landscape, use maps to look at patterns in the Earth's features, and study the course of the mighty Colorado River.	**4-ESS1-1** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. **4-ESS2-1** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. **4-ESS2-2** Analyze and interpret data from maps to describe patterns of the Earth's features. **4-ESS3-2** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
4: Earthquake Engineering **NGSS Topic Arrangements: Earth's Systems; Engineering Design** 	How can we reduce the damage caused by earthquakes?	Earthquakes can strike without warning, bringing massive destruction, but knowing where they happen can help reduce the damage caused. Students use an interactive to explore the Earth and investigate where earthquakes happen, collecting and analyzing data to identify patterns. Students find out what makes a strong and stable structure, and use this knowledge to design and build their own earthquake-proof buildings. Using an earthquake shake table, they test their structures and, like real civil engineers, refine their designs before the final build.	**4-PS4-1** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. **4-ESS2-2** Analyze and interpret data from maps to describe patterns of Earth's features. **4-ESS3-2** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.* **3–5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
5: Super Survivors **NGSS Topic Arrangements: Waves; Structure, Function, and Information Processing** 	How do the many parts of my body work together to help me live in the world? Communication involves transferring information through waves or signals.	Can you run as fast as a cheetah, hear as well as an Arctic fox, or see as far as a peregrine falcon? Through a series of videos, informational texts, and hands-on activities, students investigate the incredible world of plants and animals, and find out how they use their amazing structures and systems to survive. Building on their knowledge of information processing, students are then challenged to design a long-distance communication device. Can they use waves, digitization, and binary code to survive on a ship lost at sea?	**4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. **4-LS1-2** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. **4-PS4-1** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. **4-PS4-2** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. **4-PS4-3** Generate and compare multiple solutions that use patterns to transfer information.* **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, Multiple Choice Assessment, and Benchmark Assessment

NGSS

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-4 Systems and System Models
CCC-5 Energy and Matter

Disciplinary Core Ideas
PS3.A Definitions of Energy
PS3.B Conservation of Energy and Energy Transfer
PS3.C Relationship Between Energy and Forces

Engineering, Technology, and the Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

CROSS-CURRICULAR CONNECTIONS

Common Core English Language Arts
RI.4.1 Key Ideas and Details
SL.4.1 Comprehension and Collaboration
SL.4.4 Presentation of Knowledge and Ideas
W.4.2 Text Types and Purposes
W.4.8–9 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
4.MD.A Solve problems involving measurement and conversion of measurements
MP6 Attend to precision

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-4 Systems and System Models
CCC-5 Energy and Matter
CCC-6 Structure and Function

Disciplinary Core Ideas
PS3.A Definitions of Energy
PS3.B Conservation of Energy and Energy Transfer
PS3.D Energy in Chemical Processes and Everyday Life
ESS3.A Natural Resources

Engineering, Technology, and the Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
L.4.4 Vocabulary Acquisition and Use
RI.4.1–3 Key Ideas and Details
RI.4.4, 5 Craft and Structure
RI.4.7, 8 Integration of Knowledge and Ideas
SL.4.1, 3 Comprehension and Collaboration
SL.4.5 Presentation of Knowledge and Ideas
W.4.2 Text Types and Purposes
W.4.4, 5 Production and Distribution of Writing
W.4.7, 9 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
4.NBT.A Generalize place value understanding for multi-digit whole numbers
4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles
4.NF.B Build fractions from unit fractions
4.NF.C Understand decimal notation for fractions, and compare decimal fractions

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Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 Systems and System Models
CCC-7 Stability and Change

Disciplinary Core Ideas
ESS1.C The History of Planet Earth
ESS2.A Earth Materials and Systems
ESS2.E Biogeology
ESS3.B Natural Hazards

Engineering, Technology, and the Applications of Science
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle III Natural systems change in ways that people benefit from and can influence
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
L.4.4 Vocabulary Acquisition and Use
RI.4.1 Key Ideas and Details
RI.4.4, 5 Craft and Structure
RI.4.7–9 Integration of Knowledge and Ideas
SL.4.4, 5 Presentation of Knowledge and Ideas

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening,

Common Core Math (continued)
4.MD.A Solve problems involving measurement and conversion of measurements
4.MD.B Represent and interpret data
4.MD.C Geometric measurement: understand concepts of angle and measure angles
4.NBT.A Generalize place value understanding for multi-digit whole numbers
4.NF.C Understand decimal notation for fractions, and compare decimal fractions
4.OA.A Use the four operations with whole numbers to solve problems

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Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-4 Systems and System Models
CCC-5 Energy and Matter
CCC-6 Structure and Function

Disciplinary Core Ideas
PS4.A Wave Properties
ESS2.B Plate Tectonics and Large-Scale System Interactions
ESS3.B Natural Hazards

Engineering, Technology, and the Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.4.1–3 Key Ideas and Details
RI.4.4 Craft and Structure
RI.4.7, 9 Integration of Knowledge and Ideas
SL.4.1–2 Comprehension and Collaboration
SL.4.4–6 Presentation of Knowledge and Ideas
W.4.2, 3 Text Types and Purposes
W.4.4 Production and Distribution of Writing
W.4.7–9 Research to Build and Present Knowledge
W.4.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
4.MD.A Solve problems involving measurement and conversion of measurements
4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic

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Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-4 Systems and System Models
CCC-5 Energy and Matter
CCC-6 Structure and Function

Disciplinary Core Ideas
LS1.A Structure and Function
LS1.D Information Processing
PS3.A Definitions of Energy
PS3.B Conservation of Energy and Energy Transfer
PS4.A Wave Properties
PS4.B Electromagnetic Radiation
PS4.C Information Technologies and Instrumentation

Engineering, Technology, and the Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.4.1–3 Key Ideas and Details
RI.4.4, 5 Craft and Structure
RI.4.7–9 Integration of Knowledge and Ideas
RI.4.10 Range of Reading and Text Complexity
SL.4.1–3 Comprehension and Collaboration
SL.4.4, 5 Presentation of Knowledge and Ideas
W.4.2 Text Types and Purposes
W.4.4, 5 Production and Distribution of Writing
W.4.7, 9 Research to Build and Present Knowledge
W.4.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles
4.MD.A Solve problems involving measurement and conversion of measurements
4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic

twig Science | NEXT GEN Grade 5 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: Matter Mysteries Hotline **NGSS Topic Arrangements: Structure and Properties of Matter; Engineering Design** 	What is matter made of?	Got a science mystery you need to solve? Then call the Matter Mysteries Hotline—a one-stop service for people in need of specialist scientific help. As trainee recruits, students use their science skills to answer a series of matter-related queries. They test mystery materials to help a private investigator, choose the best materials to make an explorer's kit bag, investigate chemical reactions when a Fire and Rescue team find an unidentified substance in a school, and help a Hollywood special effects department create the perfect clay. Let's find out why matter matters!	**5-PS1-1** Develop a model to describe that matter is made of particles too small to be seen. **5-PS1-2** Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. **5-PS1-3** Make observations and measurements to identify materials based on their properties. **5-PS1-4** Conduct an investigation to determine whether the mixing of two or more substances results in new substances. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
2: Yellowstone: Uncovered **NGSS Topic Arrangements: Matter and Energy in Organisms and Ecosystems** 	How do matter and energy move through an ecosystem?	Yellowstone is one of the United States' largest and wildest national parks—and you're about to see a side of it that isn't on the tourist trail! Students become park rangers to investigate how matter and energy move through systems. They observe predators hunting prey, discover the organisms that recycle the dead, and learn how plants create their own food. As students explore the relationships between the plants and animals that live in Yellowstone, they discover how even small changes to an environment can have big impacts.	**5-LS1-1** Support an argument that plants get the materials they need for growth chiefly from air and water. **5-LS2-1** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. **5-PS3-1** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
3: H2O Response Team **NGSS Topic Arrangements: Earth's Systems; Engineering Design** 	What can we do to protect Earth's systems?	Welcome to the H2O Response Team! Students become hydrologists, tasked with investigating the growing issue of water scarcity. Students explore where water is found around the world, and discover just how little of it is drinkable. They investigate the many ways we use water, and consider the threat posed by water shortages—including droughts in California. Students then use what they've learned about sustainability to devise and implement a water campaign. Remember: every drop counts!	**5-ESS2-1** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. **5-ESS2-2** Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. **5-ESS3-1** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. **3–5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **3–5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **3–5-ETS1-3** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
4: Galactic Guidebook **NGSS Topic Arrangements: Space Systems** 	What patterns do we notice when we observe the stars?	Students join a community of international star-spotters, and report on the patterns they see in the night sky. They investigate why some stars are brighter than others, why we only see them at night, and how stars seem to move across the sky. They discover how the night sky can be used for navigation, explore the constellations, and investigate why we don't fall off the Earth! Using these explorations and observations, students create their own Galactic Guidebook—a record of patterns in the sky and in their own lives. It'll be out of this world!	**5-PS2-1** Support an argument that the gravitational force exerted by Earth on objects is directed down. **5-ESS1-2** Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. **5-ESS1-1** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distance from Earth.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, Multiple Choice Assessment, and Benchmark Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-5 Energy and Matter
CCC-6 Structure and Function

Disciplinary Core Ideas
PS1.A Structure and Properties of Matter
PS1.B Chemical Reactions

Engineering, Technology, and Applications of Science
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.5.1–3 Key Ideas and Details
RI.5.8 Integration of Knowledge and Ideas
RI.5.10 Range of Reading and Level of Text Complexity
SL.5.1–3 Comprehension and Collaboration
SL.5.5–6 Presentation of Knowledge and Ideas
W.5.1–2 Text Types and Purposes
W.5.4–5 Production and Distribution of Writing
W.5.7–9 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
5.MD.A Convert like measurement units within a given measurement system
5.MD.B Represent and interpret data
5.MD.C Geometric measurement: understand concepts of volume
5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths
MP5 Use appropriate tools strategically
MP6 Attend to precision
MP8 Look for and express regularity in repeated reasoning

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-5 Energy and Matter
CCC-7 Stability and Change

Disciplinary Core Ideas
LS1.C Organization for Matter and Energy Flow in Organisms
LS2.A Interdependent Relationships in Ecosystems
LS2.B Cycles of Matter and Energy Transfer in Ecosystems
PS3.D Energy in Chemical Processes and Everyday Life

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems
Principle III Natural systems change in ways that people benefit from and can influence

Common Core English Language Arts
L.5.6 Vocabulary Acquisition and Use
RI.5.1–3 Key Ideas and Details
RI.5.4–6 Craft and Structure
RI.5.7–8 Integration of Knowledge and Ideas
RI.5.10 Range of Reading and Level of Text Complexity
SL.5.1–2 Comprehension and Collaboration
SL.5.5 Presentation of Knowledge and Ideas
W.5.1 Text Types and Purposes
W.5.4–5 Production and Distribution of Writing
W.5.8–9 Research to Build and Present Knowledge
W.5.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths
5.MD.B Represent and interpret data
MP1 Make sense of problems and persevere in solving them.
MP3 Construct viable arguments and critique the reasoning of others
MP4 Model with mathematics
MP5 Use appropriate tools strategically

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models

Disciplinary Core Ideas
ESS2.A Earth Materials and Systems
ESS2.C The Roles of Water in Earth's Surface Processes
ESS3.C Human Impacts on Earth Systems

Engineering, Technology, and Applications of Science
ETS1.A Defining and Delimiting Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
L.5.6 Vocabulary Acquisition and Use
RI.5.1–3 Key Ideas and Details
RI.5.4 Craft and Structure
RI.5.7–9 Integration of Knowledge and Ideas
RI.5.10 Range of Reading and Level of Text Complexity
SL.5.1–2 Comprehension and Collaboration
SL.5.4 Presentation of Knowledge and Ideas
W.5.2 Text Types and Purposes
W.5.5 Production and Distribution of Writing
W.5.7–9 Research to Build and Present Knowledge
W.5.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
5.NBT.A Understand the place value system
5.MD.A Convert like measurement units within a given measurement system.
MP2 Reason abstractly and quantitatively
MP4 Model with mathematics
MP5 Use appropriate tools strategically
MP6 Attend to precision

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-7 Stability and Change

Disciplinary Core Ideas
PS2.B Types of Interactions
ESS1.A The Universe and Its Stars
ESS1.B Earth and the Solar System

Science and Engineering Practices
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems

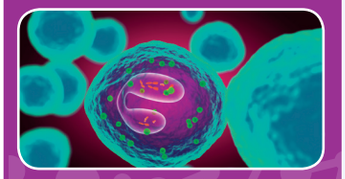
Common Core English Language Arts
L.5.4, 6 Vocabulary Acquisition and Use
RI.5.1–3 Key Ideas and Details
RI.5.4 Craft and Structure
RI.5.8 Integration of Knowledge and Ideas
RI.5.10 Range of Reading and Level of Text Complexity
SL.5.1–2 Comprehension and Collaboration
SL.5.4–5 Presentation of Knowledge and Ideas
W.5.1–2 Text Types and Purposes
W.5.4–6 Production and Distribution of Writing
W.5.7–8 Research to Build and Present Knowledge
W.5.10 Range of Writing

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

Common Core Math
5.MD.B Represent and interpret data
5.NBT.A Understand the place value system
MP1 Make sense of problems and persevere in solving them
MP3 Construct viable arguments and critique the reasoning of others
MP4 Model with mathematics
MP6 Attend to precision
MP7 Look for and make use of structure

twig Science | NEXT GEN Grade 6 Scope and Sequence

MODULES	MODULE PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)
1: BioTech Systems Worldwide **NGSS Topic Arrangements: Structure, Function, and Information Processing; Engineering Design** 	How do human body systems and subsystems work together?	Students become interns at BioTech Systems Worldwide, a bioengineering company working at the interface between human body systems and technology. As part of their training, students explore the relationship between cells, organs, and organ systems, and how they all work together. They apply what they learn from modeling activities, videos, articles, and their own research to produce informational posters and reports, and discover some of the ways technology can be used to repair or replace body parts. Students are then given their first engineering assignment: to design and build a prototype prosthetic hand!	**MS-LS1-1** Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells **MS-LS1-2** Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. **MS-LS1-3** Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. **MS-LS1-8** Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. **MS-ETS1-1** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
2: Destination Everywhere! **NGSS Topic Arrangements: Weather and Climate; Energy; Engineering Design** 	Weather and climate vary around the world, but we can use science and past trends to predict them.	Travel to some of the most extreme locations on the planet, with Destination Everywhere! Students visit the coldest places, the driest places, and the wettest places—then, they pick a place anywhere in the world, and put together a destination guide all about it. As they travel, students investigate weather and climate around the world. They discover how ocean currents influence global temperatures, why it's cold at the top of mountains, and what causes weather systems. Students also take a tour of the world's climate zones and analyze data to draw conclusions about weather and climate patterns. Happy travels!	**MS-ESS2-4** Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity **MS-ESS2-5** Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. **MS-ESS2-6** Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. **MS-PS3-3** Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.* **MS-PS3-4** Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. **MS-PS3-5** Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. **MS-ETS1-1** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution. **MS-ETS1-3** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution.
3: The Red List **NGSS Topic Arrangements: Growth, Development, and Reproduction of Organisms** 	How do the environment and genetics affect animals and plants?	Students become ecologists, on a mission to save endangered or threatened species from extinction. Through research and investigations, students build their awareness and knowledge of their chosen species and the threats they face. Students study plant and animal reproduction, including courtship behaviors, sexual and asexual methods of reproduction, and the inheritance and variation of traits. They also discover how some animal species look after their offspring to help ensure their survival, and explore how conservationists around the world try to ensure the survival of entire species. Then, it's their turn to come up with a conservation plan of their own.	**MS-LS1-4** Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. **MS-LS1-5** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. **MS-LS3-2** Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
4: Cities of the Future **NGSS Topic Arrangements: Weather and Climate; Human Impacts; Engineering Design** 	How can we reduce harmful impacts on the environment in the places where people live?	Students are tasked with designing an environmentally friendly city of the future. To better understand the need for sustainable cities, they investigate various human impacts on the environment, and the ways these can be minimized. Using three fictionalized case studies, students explore the challenge of balancing the needs of a population with the protection of the natural environment. Students also analyze data to make claims about the causes of climate change and its effects on living things. They explore real-life examples of cities that are trying to make changes for the better.	**MS-ESS3-3** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* **MS-ESS3-5** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. **MS-LS1-4** Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. **MS-LS1-5** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. **MS-ETS1-1** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution. **MS-ETS1-2** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. **MS-ETS1-4** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, Multiple Choice Assessment, and Benchmark Assessment

NGSS

CROSS-CURRICULAR CONNECTIONS

Row 1

Crosscutting Concepts
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-6 Structure and Function

Disciplinary Core Ideas
LS1.A Structure and Function
LS1.D Information Processing

Engineering, Technology, and Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Common Core English Language Arts
RI.6.1–3 Key Ideas and Details
RI.6.4, 6 Craft and Structure
RI.6.7–9 Integration of Knowledge and Ideas
RI.6.10 Range of Reading and Level of Text Complexity
L.6.6 Vocabulary Acquisition and Use
SL.6.1–2 Comprehension and Collaboration
SL.6.4–6 Presentation of Knowledge and Ideas
W.6.1–2 Text Types and Purposes
W.6.4–5 Production and Distribution of Writing
W.6.7–8 Research to Build and Present Knowledge
W.6.10 Range of Writing

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

Common Core Math
6.SP.B Summarize and describe distributions
6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples
6.RP.A Understand ratio concepts and use ratio reasoning to solve problems

Row 2

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-5 Energy and Matter
CCC-6 Structure and Function
CCC-7 Stability and Change

Disciplinary Core Ideas
ESS2.C The Roles of Water in Earth's Surface Processes
ESS2.D Weather and Climate
PS3.A Definitions of Energy
PS3.B Conservation of Energy and Energy Transfer

Engineering, Technology, and Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems

Common Core English Language Arts
RI.6.1–3 Key Ideas and Details
RI.6.5 Craft and Structure
RI.6.7 Integration of Knowledge and Ideas
L.6.6 Vocabulary Acquisition and Use
SL.6.1–3 Comprehension and Collaboration
SL.6.4–6 Presentation of Knowledge and Ideas
W.6.1–2 Text Types and Purposes
W.6.4–6 Production and Distribution of Writing
W.6.7–9 Research to Build and Present Knowledge
W.6.10 Range of Writing

WIDA English Language Development
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English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
6.EE.C Represent and analyze quantitative relationships between dependent and independent variables
6.G.A Solve real-world and mathematical problems involving area, surface area, and volume
6.NS.A Compute fluently with multi-digit numbers
6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers
6.RP.A Understand ratio concepts and use ratio reasoning to solve problems
6.SP.B Summarize and describe distributions

Row 3

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-6 Structure and Function

Disciplinary Core Ideas
LS1.B Growth and Development of Organisms
LS3.A Inheritance of Traits
LS3.B Variation of Traits

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Mathematics and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions

Science and Engineering Practices (continued)
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle II People influence natural systems
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.6.1–2 Key Ideas and Details
RI.6.4-6 Craft and Structure
RI.6.7–8 Integration of Knowledge and Ideas
L.6.6 Vocabulary Acquisition and Use
SL.6.1–2 Comprehension and Collaboration
SL.6.4 Presentation of Knowledge and Ideas
W.6.1–2 Text Types and Purposes
W.6.4–5 Production and Distribution of Writing
W.6.4–8 Research to Build and Present Knowledge

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
6.EE.C Represent and analyze quantitative relationships between dependent and independent variables
6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers
6.RP.A Understand ratio concepts and use ratio reasoning to solve problems
6.SP.A Develop understanding of statistical variability
6.SP.B Summarize and describe distributions

Row 4

Crosscutting Concepts
CCC-1 Patterns
CCC-2 Cause and Effect
CCC-3 Scale, Proportion, and Quantity
CCC-4 System and System Models
CCC-5 Energy and Matter
CCC-7 Stability and Change

Disciplinary Core Ideas
ESS2.D Weather and Climate
ESS3.C Human Impacts on Earth Systems
ESS3.D Global Climate Change
LS1.B Growth and Development of Organisms

Engineering, Technology, and Applications of Science
ETS1.A Defining Engineering Problems
ETS1.B Developing Possible Solutions
ETS1.C Optimizing the Design Solution

Science and Engineering Practices
SEP-1 Asking Questions and Defining Problems
SEP-2 Developing and Using Models
SEP-3 Planning and Carrying Out Investigations
SEP-4 Analyzing and Interpreting Data
SEP-5 Using Math and Computational Thinking
SEP-6 Constructing Explanations and Designing Solutions
SEP-7 Engaging in Argument from Evidence
SEP-8 Obtaining, Evaluating, and Communicating Information

Environmental Principles and Concepts
Principle I People depend on natural systems
Principle II People influence natural systems
Principle III Natural systems change in ways that people benefit from and can influence
Principle IV There are no permanent or impermeable boundaries that prevent matter from flowing between systems
Principle V Decisions affecting resources and natural systems are complex and involve many factors

Common Core English Language Arts
RI.6.1–2 Key Ideas and Details
RI.6.4–5 Craft and Structure
RI.6.7–9 Integration of Knowledge and Ideas
L.6.1 Conventions of Standard English
L.6.6 Vocabulary Acquisition and Use
SL.6.1–2 Comprehension and Collaboration
SL.6.4–5 Presentation of Knowledge and Ideas
W.6.1–2 Text Types and Purposes
W.6.4–5 Production and Distribution of Writing
W.6.7 Research to Build and Present Knowledge
W.6.10 Range of Writing

WIDA English Language Development
Standard 1: Social and Instructional Language
Standard 2: The Language of Language Arts
Standard 3: The Language of Mathematics
Standard 4: The Language of Science

English Language Proficiency Domains
Speaking, Listening, Reading, Writing

Common Core Math
6.EE.C Represent and analyze quantitative relationships between dependent and independent variables
6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples
6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers
6.SP.B Summarize and describe distributions