twig SCIENCE Grade 3 Scope and Sequence

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

MODULES	MODULE ANCHOR PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS* (*PEs that integrate traditional science content with engineering through SEPs or DCIs)	NGSS		CROSS-CURRICULAR CONNECTIONS	
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.	**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
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.	**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
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.	**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
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.	**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