EARTH SCIENCE

Content Area: **Science**
Course(s):
Time Period: **Trimester 1**
Length: **3-4 weeks**
Status: **Published**

Course Pacing Guide

This pacing guide should include the vision and mission of the course. It will be the same for all units in your course.

The simpler, the better. Pacing guide flaws come when they are too constricting, so big ideas is best (Cobb, McClain, de Silva Lamberg, & Dean, 2003; Wiggins, Wiggins, & McTighe, 2005)

Unit	MP/Trimester	Weeks
Earth Science-Kinderagrten-Trees/Weather	1	3-4

Unit Overview

Unit Rationale

It is a tree, magnificent in dimension and awe inspiring in its longevity and durability.

To a primary student, the oak on the corner, the pines at the park, and the mulberry tree at school are all giants. Systematic investigation of trees over the seasons will bring students to a better understanding of the place of trees at school and in the community. Students will observe day-to-day changes in weather over the year, as well as the impact weather has on living things.

Enduring Understandings

Unit Enduring Understandings

Trees

- Trees are living plants.
- Trees have structures: branches, leaves trunk, and roots.
- Trees differ in size and shape.
- Plants have basic needs: water, light, air, nutrients, and space

Leaves

- Different kinds of trees have different leaves.
- Leaves have properties: size, shape, tip, edge, texture, and color
- Leaves properties vary.
- Leaves can be described and compared by their properties

Observing Weather

- Weather is the condition in the air outdoors and be described; weather changes.
- Temperature is how hot or cold it is; thermometers measure temperature.
- Sunlight warms Earth’s surface
- Wind is moving air; a wind sock indicated wind direction and speed.

Trees Through the Seasons

- Seasons change in predictable annual pattern: fall, winter, spring, and summer
- Bark, twigs, leaves, buds, flowers, fruits, and seeds are parts of trees.
- The buds on twigs grow into leaves or flowers.
- Trees change through the seasons.
- Some trees produce seeds that can grow into new trees of the same kind.
- Some trees lose their leaves in winter; others do not.

Essential Questions

Unit Essential Questions

- What are the parts of trees?
- What do trees need to grow?
- How are leaves different?
- What is the weather today?
- What do trees look like during different seasons?

New Jersey Student Learning Standards (No CCS)

Disciplinary Core Ideas:

LS1.A: Structure and function
All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (from Grade 1)

LS1.C: Organization for matter and energy flow in organisms
All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

ESS2.E: Biogeology
Plants and animals can change their environment.

ESS3.A: Natural resources
Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

ESS2.D: Weather and climate
Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

ESS3.B: Natural hazards
Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

PS3.B: Conservation of energy and energy transfer
Sunlight warms Earth's surface.

ETS1.B: Developing possible solutions

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

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-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-LS1-1	**Use observations to describe patterns of what plants and animals (including humans) need to survive.**
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-ESS3-1	**Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.**

Amistad Integration

Holocaust/Genocide Education

Interdisciplinary Connections

Primary interdisciplinary connections:

ELA/Literacy

RF 2: Demonstrate understanding of spoken words, syllables, and sounds.

RI 1: Ask and answer questions about key details.

RI 2: Identify main topic and retell key details.

RI 3: Describe the connection between two ideas.

RI 4:Ask and answer questions about unknown words.

RI 7: Describe the relationship between illustrations and the text.

RI 8: Identify the reasons an author gives to support points.

RI 9: Identify similarities in and differences between two texts on the same topic.

RI 10: Actively engage in group reading activities with purpose and understanding.

W 2: Write informative/explanatory text.

W 5: Strengthen writing.

W 8: Gather information to answer a question.

SL 1: Participate in collaborative conversations.

SL 2: Ask and answer questions about key details and request clarification.

SL 3: Ask and answer questions to seek help, information, or to clarify.

SL 4: Describe with details

SL 6: Speak audibly, express clearly.

L 1: Use question words; expand complete sentences in shared language activities.

L 5a: Sort objects into categories.

RL 2: Retell stories, including key details.

Math

Reason abstractly and quantitatively. (K-ESS2-1),(K-2-ETS1-1) MP.2

Model with mathematics. (K-ESS2-1),(K-ESS3-2),(K-2-ETS1-1) MP.4

Use appropriate tools strategically. (K-2-ETS1-1) MP.5

Counting and Cardinality (K-ESS3-2) K.CC

Know number names and the count sequence. (K-ESS2-1) K.CC.A

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1) K.MD.A.1

Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1) K.MD.B.3 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1) 2.MD.D.10

Technology Standards

K-2	Plan strategies to guide inquiry Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.	8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.

21st Century Themes/Careers

21st century themes: Digital media will be used incorporated in project presentations. This module will develop students' abilities to do and understand scientific inquiry. Students will identify questions, design and conduct scientific investigations to answer those questions, employ tools to gather, analyze, and interpret data. They will use data to construct reasonable explanations, develop and communicate investigations and evidence and understand that scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge. This module will develop and extend students' understandings about science and technology. Students will work collaboratively in teams and use tools and scientific techniques to make better observations.

Financial Literacy Integration

9.1.4.A.1 Explain the difference between a career and a job, and identify various jobs in the community and

the related earnings.

Instructional Strategies & Learning Activities

Unit Learning Targets

Students will ...

engage in science and engineering practices by asking questions, participating in collaborative investigations, observing, recording, and interpreting data to build explanations, and obtaining information from photographs. Students gain experiences that will contribute to an understanding of the crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; systems and system models; structure and function; and stability and change.

Differentiated Instruction

- Curriculum Map
- Inquiry/Problem-Based Learning
- Learning preferences integration (visual, auditory, kinesthetic)
- Sentence & Discussion Stems
- Tiered Learning Targets
- Learning through play
- Meaningful Student Voice & Choice
- Relationship-Building & Team-Building
- Self-Directed Learning
- Choice Boards
- Debate
- LMS use
-
- Mastery Learning (feedback toward goal)
- Goal-Setting & Learning Contracts
- Game-Based Learning
- Grouping
- Socratic Seminar
- Genius Hour
- Rubrics
- Learning Menus
- Jigsaws
- Learning Through Workstations
- Concept Attainment
- Flipped Classroom

- Mentoring
- Assessment Design & Backwards Planning
- Student Interest & Inventory Data

Formative Assessments

Embedded Assessments:

- **Response Sheets**
- **Performance Assessments**

Summative Assessment

- **Science Notebook Entries**

Benchmark Assessments

Alternate Assessments

Resources & Technology

FOSS SCIENCE PROGRAM

Brain Pop, Jr

BOE Approved Texts

FOSS SCIENCE PROGRAM AND MATERIALS

Closure

- Snowstorm - Students write down what they learned on a piece of scratch paper and wad it up. Given a signal, they throw their paper snowballs in the air. Then each learner picks up a nearby response and reads it aloud.
- Parent Hotline - Give students an interesting question about the lesson without further discussion. Email their guardians the answer so that the topic can be discussed over dinner.
- DJ Summary - Learners write what they learned in the form of a favorite song. Offer to let one or two sing thier summary.
- Gallery Walk - On chart paper, small groups of students write and draw what they learned. After the completed works are attached to the classroom walls, others students affix post-its to the posters to extend on the ideas, add questions.
- Sequence It - create timelines of major events discussed
- Low-Stakes Quizzes - Give a short quiz using technologies like Kahoot or a Google form.
- Have students write down three quiz questions (to ask at the beginning of the next class).
- Question Stems - Have students write questions about the lesson on cards, using question stems framed around Bloom's Taxonomy. Have students exchange cards and answer the question they have acquired.
- Kids answer the following prompts: "What takeaways from the lesson will be important to know three years from now? Why?
- Have students dramatize a real-life application of a skill.
- Ask a question. Give students ten seconds to confer with peers before you call on a random student to answer. Repeat.
- Have kids orally describe a concept, procedure, or skill in terms so simple that a child in first grade would get it.
- Direct kids to raise their hands if they can answer your questions. Classmates agree (thumbs up) or disagree (thumbs down) with the response.
- Have kids create a cheat sheet of information that would be useful for a quiz on the day's topic.
- Kids write notes to peers describing what they learned from them during class discussions.
- Ask students to summarize the main idea in under 60 seconds to another student acting as a well-known personality who works in your discipline. After summarizing, students should identify why the famous person might find the idea significant.
- Have students complete the following sentence: "The [concept, skill, word] is like _____ because _____."
- Ask students to write what they learned, and any lingering questions on an "exit ticket". Before they leave class, have them put their exit tickets in a folder or bin labeled either "Got It," "More Practice, Please," or "I Need Some Help!"
- After writing down the learning outcome, ask students to take a card, circle one of the following options, and return the card to you before they leave: "Stop (I'm totally confused. Go (I'm ready to

move on.)" or "Proceed with caution (I could use some clarification on . . .)"

ELL

- Alternate Responses
- Advance Notes
- Extended Time
- Teacher Modeling
- Simplified Written and Verbal Instructions
- Frequent Breaks
- E-Dictionaires
- Google Translate

Special Education

- Shorten assignments to focus on mastery of key concepts.
- Shorten spelling tests to focus on mastering the most functional words.
- Substitute alternatives for written assignments (clay models, posters, panoramas, collections, etc.)
- Specify and list exactly what the student will need to learn to pass.
- Evaluate the classroom structure against the student's needs (flexible structure, firm limits, etc.).
- Keep workspaces clear of unrelated materials.
- Keep the classroom quiet during intense learning times.
- Reduce visual distractions in the classroom (mobiles, etc.).
- Provide a computer for written work.
- Seat the student close to the teacher or a positive role model.
- Use a study carrel. (Provide extras so that the student is not singled out.)
- Provide an unobstructed view of the chalkboard, teacher, movie screen, etc.
- Keep extra supplies of classroom materials (pencils, books) on hand.
- Maintain adequate space between desks.
- Give directions in small steps and in as few words as possible.
- Number and sequence the steps in a task.
- Have student repeat the directions for a task.
- Provide visual aids.
- Go over directions orally.
- Provide a vocabulary list with definitions.
- Permit as much time as needed to finish tests.

- Allow tests to be taken in a room with few distractions (e.g., the library).
- Have test materials read to the student, and allow oral responses.
- Divide tests into small sections of similar questions or problems.
- Allow the student to complete an independent project as an alternative test.
- Give progress reports instead of grades.
- Grade spelling separately from content.
- Allow take-home or open-book tests.
- Show a model of the end product of directions (e.g., a completed math problem or finished quiz).
- Stand near the student when giving directions or presenting a lesson.
- Mark the correct answers rather than the incorrect ones.
- Permit a student to rework missed problems for a better grade.
- Average grades out when assignments are reworked, or grade on corrected work.
- Use a pass-fail or an alternative grading system when the student is assessed on his or her own growth.

504

Examples of accommodations in 504 plans include but are not limited to:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials
- behavior management support
- adjusted class schedules or grading
- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits
- occupational or physical therapy

At Risk

- Use of mnemonics
- Have student restate information
- Provision of notes or outlines
- Concrete examples
- Use of a study carrel
- Assistance in maintaining uncluttered space

- Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
- Peer or scribe note-taking
- Lab and math sheets with highlighted instructions
- Graph paper to assist in organizing or lining up math problems
- Use of manipulatives
- No penalty for spelling errors or sloppy handwriting
- Follow a routine/schedule
- Teach time management skills
- Verbal and visual cues regarding directions and staying on task
- Adjusted assignment timelines
- Visual daily schedule
- Immediate feedback
- Work-in-progress check
- Pace long-term projects
- Preview test procedures
- Film or video supplements in place of reading text
- Pass/no pass option
- Cue/model expected behavior
- Use de-escalating strategies
- Use peer supports and mentoring
- Have parent sign homework/behavior chart
- Chart progress and maintain data

Gifted and Talented

Focus on effort and practice

Offer the Most Difficult First

Offer choice

Speak to Student Interests

Allow G/T students to work together

Encourage risk taking