PHYSICAL SCIENCE

Content Area: **Science**
Course(s):
Time Period: **Trimester 3**
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
Physical Science-Kindergarten-Motions and Materials	3	3-4

Unit Overview

Unit Summary

The Materials and Motion Module provides early-childhood students with integrated experiences with physical science, earth science, and engineering core ideas that relate to students' interests and are teachable and learnable.

Enduring Understandings

Unit Enduring Understandings

Getting to Know Wood

- Wood can be described in terms of its properties.
- Different kinds of wood come from different kinds of trees. Trees are natural resources. Some kinds of wood are processed and made by people.
- Wood floats in water but can be made to sink.
- Sawdust is tiny wood pieces that can be recycled.
- Basic materials can be transformed into new materials (particleboard and plywood).

Getting to Know Paper

- Paper has many observable properties.
- People make paper from wood.
- The properties of papers determine their uses.
- Some papers absorb water, others do not.
- Some paper changes when soaked in water. Some paper breaks down into smaller fibers.
- Paper can be reused, recycled, and fabricated.

Getting to Know Fabric

- Fabric is a flexible material with a wide range of properties. The properties of fabrics determine their uses.
- Fabrics can be made of woven threads.
- Fabrics can absorb, transmit, or repel water.
- Wet fabric dries when water evaporates, leaving the fabric unchanged.
- Land, air, water, and trees are natural resources.
- The Sun warms the Earth's surface.
- Engineers design and test solutions to problems.

Getting Things to Move

- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- Gravity pulls things down.
- A bigger push or pull makes things go faster.
- When objects touch or collide, they push on one another and can change motion.

Essential Questions

Unit Essential Questions

- What makes on material different than another?
- How can we conserve natural resources?
- What causes objects to move?
- What happens when objects collide?

New Jersey Student Learning Standards (No CCS)

Disciplinary Core Ideas:

PS1.A: Structure and properties of matter
Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (From grade 2)
Different properties are suited to different purposes. (From grade 2)

ESS3.C: Human impacts on Earth systems
Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and living things.

ETS1.A: Defining and delimiting engineering problems
Asking questions, making observations, and gathering information are helpful in thinking about problems.

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.

ETS1.C: Optimizing the design solution
Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

PS3.C: Relationship between energy and forces
A bigger push or pull makes things speed up or slow down more quickly.

PS2.B: Types of interactions
When objects touch or collide, they push on one another and can change motion.

PS2.A: Forces and Motion

Pushes and pulls can have different strengths and directions. **Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.** **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.**

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.***
K-ESS3-3	**Communicate solutions that will reduce the impact of humans on the 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 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.**
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.**
K-PS3-1	**Make observations to determine the effect of sunlight on Earth's surface.**
K-PS3-2	**Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.***
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.**
KPS2-2	**Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.***

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

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 designing objects and systems to achieve specific outcomes. Students gain experiences that will contribute to beginning-level understanding of the crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter, and structure and function.

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
- Mock Trial
- The Hot Seat/Role-Play
- Student Data Inventories
- 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 journal entries

Benchmark Assessments

Alternate Assessments

Resources & Technology

Foss Science Program

Brain Pop, Jr

Discovery Education

BOE Approved Texts

Foss Science Program

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

- 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