Course Title/Grade: Science 1

2018 - 2019 Course Syllabus
Prince George's County Public Schools

INSTRUCTOR INFORMATION		COURSE INFORMATION	
NAME:		**COURSE NUMBER:**	
E-MAIL ADDRESS:		**CLASS TIME:**	
PLANNING TIME:		**MEETING DAYS:**	
SCHOOL:		**ROOM:**	
SCHOOL PHONE NUMBER:		**STUDENT TEXTBOOK/DIGITAL RESOURCES:**	Grade 1 Science Dimensions. (2017). Orlando, FL: Houghton Mifflin Harcourt. Digital Resource: Discovery Education Techbook™ Digital Textbooks.

Prerequisites: Science K

Course Description: First grade science students are actively engaged in a comprehensive science program as they begin to make sense of the natural world through phenomenon-based instruction. Students will be interacting with content from different topics to include Earth and Space Science (ES), Life Science (LS), Physical Science (PS) and Engineering Design (ETS) Disciplinary Core Ideas (DCIs) from the Next Generation Science Standards (NGSS). Students are expected to develop understanding of the relationship between sound and vibrating materials as well as between the availability of light and ability to see objects. The idea that light travels from place to place can be understood by students at this level through determining the effect of placing objects made with different materials in the path of a beam of light. Students are expected to develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are like, but not exactly the same as, their parents.

Students are able to observe, describe, and predict some patterns of the movement of objects in the sky. The Crosscutting Concepts (CCCs) of patterns; cause and effect; structure and function; and influence of

engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency with Science and Engineering Practices (SEPs) by asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students will conduct inquiry-based investigations through hands-on, digital and virtual laboratory experiences. Students will be introduced to various STEM careers while in grades K-12.

PGCPS Elementary Science Policy: Grades K-1

Overview: *The goal of grading and reporting is to provide the students with feedback that reflects their progress toward the mastery of the indicators and objectives found in the Science Curriculum Framework Progress Guide. Teachers will determine the range of points for each assignment and place the assignment in SchoolMax; SchoolMax will then convert the points to a percentage and then the percentage will be converted to a grade of a PR, IP, or ND.*

Factors	Brief Description	Grade Percentage Per Quarter
Classwork	This includes work completed in the classroom setting. Class work will include but is not limited to: ● Classroom participation ● Classroom assignments (written or oral) ● Vocabulary and content development ● Projects (Individual and/or group) ● At least 5% of class work must be hands-on, lab experiences or projects	**55%**
Homework	This includes all work completed outside the classroom. Assignments can include, but are not limited to: ● Take-Home Booklets with Home Activities ● Homework Projects ● Science Logs ● Written Assignments	**5%**
Assessment	This category encompasses both the traditional (exams and quizzes) and alternative methods of assessing student learning with the goal of mastery (presentations, projects, portfolios, completion of graphic organizers/foldables, anecdotal notes of teacher observations, teacher conferences, student written responses). Assessments can include, but are not limited to: ● Oral or written evaluation that reflects the student's performance on a summary of a lesson, chapter or unit ● Science Problem of the Week items ● Class STEM Fair projects	**40%**

Course Title/Grade: Science 1
Course Sequence: At-A-Glance

Actual pacing may differ slightly due to individual school schedules/events, testing, and calendar modifications. In support of the shifts and demands of the Next Generation Science Standards (NGSS), the Science and Engineering Practices (SEPs) and the Crosscutting Concepts (CCCs) are integrated to deliver each topic taught.

Each Unit focuses on making sense of Phenomena through the integration of 3- Dimensional teaching and learning. For purposes of our K-5 NGSS Curriculum, ***Sense-making*** *is defined as "the process by which the learner actively engages with the natural or designed world; wonders about it; and develops, tests, and refines ideas with peers and the teacher." (Schwarz, Passmore & Reiser, 2017).*

<table>
<tr><th colspan="2">Grade 1</th></tr>
<tr>
<td>Quarter One
September 4, 2018 - November 2, 2018 (44 days)
Content To Be Taught:
Constructing an Argument with Supporting Evidence about Illuminating Objects
Determining the Path of Light with Different Materials
Investigating Making Sounds and Vibrations
Analyzing Data to Compare Performance of Designs (Engineering Design)</td>
<td>Quarter Two
November 3, 2018 - January 25, 2019 (47 days)
Content To Be Taught:
Using Light or Sound for Communication
Illustrating the Shape of an Object Used For Problem Solving (Engineering Design)</td>
</tr>
<tr>
<td>Quarter Three
January 26, 2019 - March 28, 2019 (43 days)
Content To Be Taught:
Describing Patterns of the Sun, Moon and Stars
Observing The Amount of Daylight To The Time of Year</td>
<td>Quarter Four
March 29, 2019 - June 13, 2019 (46 Days)
Content To Be Taught:
Helping Offspring Survive by Determining Behavioral Patterns of their Parents
Constructing an Argument with Supporting Evidence to Compare Plants and Animals to their Parents
Designing Solutions for Humans to Mimic the Survival Techniques of Plants and Animals</td>
</tr>
</table>

Next Generation Science Standards Parents' Guide

https://www.nextgenscience.org/ and https://www.nextgenscience.org/parentguides

As the Next Generation Science Standards (NGSS) are implemented in PGCPS, they will enable students to: Develop a deeper understanding of science beyond memorizing facts, and Experience similar scientific and engineering practices as those used by professionals in the field.

How can you support your child's success?
Although this new approach to teaching and learning K–12 science is different than the past, you can still actively support your child's success in the classroom!

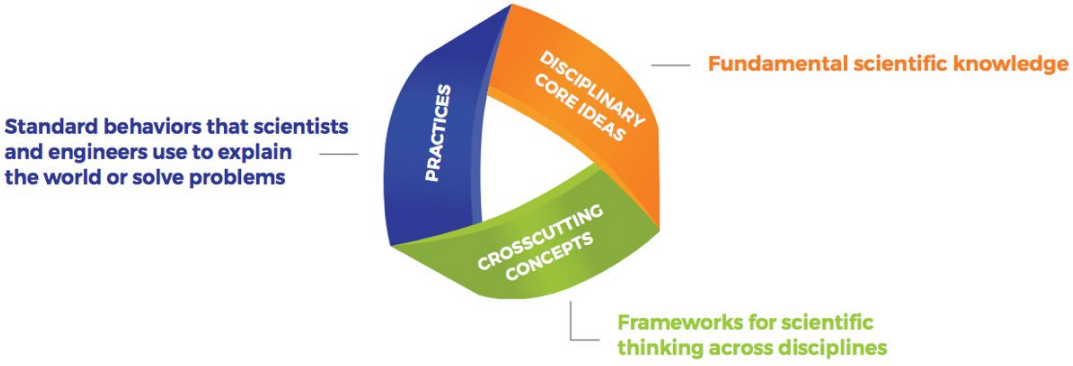
1. Speak to your child's teacher(s) or principal about how these important changes affect your school.	2. Ask your child's teacher thoughtful questions based on the information provided in this syllabus.	3. Learn how you can help the teacher(s) reinforce classroom instruction at home.

Next Generation Science Standards Performance Expectations (PEs)

Performance Expectations state what students should be able to do in order to demonstrate that they have met the standard, thus providing the same clear and specific targets for curriculum, instruction, and assessment.

Three Dimensional Learning (3D Learning)

The NGSS emphasizes three distinct, yet equally important dimensions that help students learn science. Each dimension is integrated into the NGSS and—combined—the three dimensions build a powerful foundation to help students build a cohesive understanding of science over time.



Dimension 1: Science and Engineering Practices (SEPs): *The practices describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems. This dimension emphasizes that engaging in scientific investigation requires not only skill but also knowledge that is specific to each practice.*

1. Asking questions (for science) and defining problems (for engineering)

2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Dimension 2: Crosscutting Concepts (CCCs): *Crosscutting concepts describe concepts that bridge disciplinary boundaries, having explanatory value throughout much of science and engineering. These crosscutting concepts have application across all domains of science; they are a way of linking the different domains of science. The Framework emphasizes that these concepts need to be made explicit for students because they provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically based view of the world.*

1. Patterns
2. Cause and effect: Mechanism and explanation
3. Scale, proportion, and quantity
4. Systems and system models
5. Energy and matter: Flows, cycles, and conservation
6. Structure and function
7. Stability and change

Dimension 3: Disciplinary Core Ideas (DCIs): *Disciplinary core ideas have the power to focus K–12 science curriculum, instruction, and assessments on the most important aspects of science. To be considered core, the ideas met at least two of the following criteria and ideally all four:*

- *Have **broad importance** across multiple sciences or engineering disciplines or be a key organizing concept of a single discipline;*
- *Provide a **key tool** for understanding or investigating more complex ideas and solving problems;*
- *Relate to the **interests and life experiences of students** or be connected to societal or personal concerns that require scientific or technological knowledge;*
- *Be teachable and learnable over multiple grades at increasing levels of depth and sophistication.*
- *Disciplinary ideas are grouped in four major domains: physical sciences; the life sciences; the earth and space sciences; and engineering, technology and applications of science.*

Physical Sciences (PS)	***Life Sciences (LS)***
PS1: Matter and its interactions PS2: Motion and stability: Forces and interactions PS3: Energy PS4: Waves and their applications in technologies for information transfer	LS1: From molecules to organisms: Structures and processes LS2: Ecosystems: Interactions, energy, and dynamics LS3: Heredity: Inheritance and variation of traits LS4: Biological evolution: Unity and diversity

Earth and Space Sciences (ESS) ESS1: Earth's place in the universe ESS2: Earth's systems ESS3: Earth and human activity	***Engineering, Technology, and Applications of Science (ETS)*** ETS1: Engineering design ETS2: Links among engineering, technology, science, and society

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Parents please sign this page and return to the classroom teacher.

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Student's Name _____ **Parent's/Guardian's Signature** _____ **Date** _____