Academia Santa Rosa de Lima

Bayamón, Puerto Rico
Science
Eighth Grade

Syllabus

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8th Grade Science Overview 2023 – 2024

I. Description

This document is designed to provide parents/guardians/community an overview of the curriculum taught in the fifth grade science classroom. This document supports families in understanding the learning goals for the course, and how students will demonstrate what they know and are able to do. The units objectives describe ways in which students are expected to engage in the content. The unit objective weave the other knowledge and skills together so that students may be successful problem solvers and use knowledge learned efficiently and effectively in daily life.

The course enhances and expands the student's abilities and skills in the following areas:

- integrated for Science, Technology, Engineering and Mathematics (STEM)
- analysis
- critical thinking
- problem solving
- collaborative team building

II. Course material and timeline

Grading Period 1

Unit 01: How do we study matter

Unit overview: Scientific Method introduces students to the basic steps of this useful process. Students will learn how to develop a hypothesis based on their observations about something and conduct a simple experiment to test it. In this unit, students will begin their learning by engaging in discussions about safety in science and the scientific practices that scientists follow when conducting investigations. They will continue by learning how to construct scientific explanations that contain a claim, evidence, and reasoning.

Unit 02: Measuring matter

Unit overview: Identify a measurable characteristic of an object, select an appropriate standard or non-standard unit of measure and tool, and determine the measurement to a specified level of accuracy. Students will be defining important terms such as matter, mass, volume, and weight. By defining these terms, students will be able to correlate them to the various physical properties of matter. In addition, students will become familiar with measuring the volume of regular and irregular shaped solid objects. This lesson also encourages students to compare and contrast the similarities and differences between weight and mass. They will use graphic organizers to illustrate these. Additionally, students will investigate measuring mass and weight of various substances and apply correct units of measure to the data calculations. The units focus on the study of physical properties of matter; therefore, students will classify matter based on measurable, testable, and observable physical properties.

Lesson	Objectives	Date
03: *Scientific method*	At the end of the lesson, the student will: ▪ Explain the Scientific Method and how we apply it to our daily life ▪ Identify dependent variable ▪ Identify independent variable ▪ Understand and write an hypothesis	**August**
02: *Measurements ,units and prefixes*	At the end of the lesson, the student will: ▪ Understand the different methods of measuring ▪ Learn the history of the creation of the International System of Units (SI) ▪ Define the International System of Units ▪ Learn the concepts of mass, weight, volume, time, and temperature	**September**
02: *Conversions*	At the end of the lesson, the student will:	

03: *Graphs*	▪ Understand the concept of conversion ▪ Solve problems involving conversions of measurements given in a particular unit into other units. At the end of the lesson, the student will: ▪ Build graphs to represent the relationship between variables in an accurate manner	

Grading Period 1

Unit 03: Matter

Unit overview: Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample. In addition this unit will focus in identifying the basic examples of and compare and classify the properties of compounds, including acids, bases, and salts. Students will also distinguish among mixtures (including solutions) and pure substances.

Lesson	Objectives	Date
01: *Classification of matter*	At the end of the lesson, the student will: ▪ Be able to define matter, solid, liquid, gas, element, atom, heterogeneous, homogeneous, and solution. ▪ Explains that mixtures maintain the physical properties of their individual ingredients ▪ Identifies changes that occur in the physical properties of the ingredients of solutions ▪ Categorize an item of matter. ▪ Draw a diagram of the classification of matter. ▪ Draw a matter diagram integrated with the four material categories and specific items of matter	**October**

Grading Period 2

Unit 03: Matter (continuation)

Unit 08: States of matter

Unit overview: After the basics and fundamental concepts of matter have been introduce, students are now ready to study in more depth other chemical properties of liquids, solids, gases and plasma.

Lesson	Objectives	Date
02: *Matter and it's states*	At the end of the lesson, the student will: ▪ Differentiate between a solid, liquid, and gas. ▪ Understand the molecular structure of solids, liquids, and gases ▪ Explain the differences between the structure of each state	
01: *Solids and liquids*	At the end of the lesson, the student will: ▪ Why each liquid behaves differently ▪ What's the importance of knowing about viscosity ▪ Observe and compare and contrast viscosity of different liquids ▪ Describe a fluid as having "high" or "low" viscosity. ▪ Medical application of viscosity	**November/December**
02: *Gases and plasma*	At the end of the lesson, the student will: ▪ The goal of this lesson is to connect the idea of plasma to common states of matter on Earth (solids, liquids, and gases) by examining examples, and differentiating between particles in plasma and molecules or atoms in gases.	

Grading Period 3

Unit 05: Atoms and elements

Unit overview: The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information**.** In this unit, students will be able to identify and describe the three classes of elements in order to learn more detail about how the periodic table is organized for when they reach 11^{th} grade. Students will gain a deep understanding of this topic and be able to identify unknown substances based on their physical properties. The students will also understand the fundamental differences between elements and compounds. Eight graders are expected to compare the luster, conductivity and malleability of metals, nonmetals, and metalloids.

Lesson	Objectives	Date
01: *The Periodic Table* **02**: *Classification of elements*	At the end of the lesson, the student will: ▪ Describe the contribution of different scientists to the organization and classification of elements based on their characteristics, including covering the periodic table. ▪ Explain that the periodic table is based on the principle that the physical and chemical properties of elements are a periodic function of their atomic number. ▪ compare and contrast the subatomic particles that make-up an atom At the end of the lesson, the student will: ▪ Classify and describe the elements, according to the groups in the periodic table, as metals, nonmetals, and metalloids. ▪ Describe the characteristics and properties of the different groups of elements that make up the periodic table	**January**

Grading Period 3

Unit 04: Particles of matter

Unit overview: After the introduction and study of the periodic table and elements, in this unit students will learn how to calculate the number of protons, neutrons and electrons and use the information to construct a Bohr model of the atom.

Lesson	Objectives	Date
02: *Mass number and isotopes*	At the end of the lesson, the student will: ▪ To be able to sketch an atom and indicate the location of the nucleus, the shells, and the electronic orbitals ▪ To be able to calculate the maximum number of electrons that can occupy a specific shell ▪ To identify the symbols for atomic number, atomic mass, and number of neutrons in an atom ▪ To explain the difference between isotopes, isotones, isobars, and isomers and give examples of each.	**February/March**

Grading Period 4

Unit 21: Organic and biochemical compounds

Unit overview: After completing this unit, students will be able to identify the basic functional groups of organic chemistry through multiple examples of nomenclature and visual aspects for the compounds. Here we will study of the structure, properties, composition, reactions, and preparation of carbon-containing compounds.

Unit 17: Chemical reaction

Lesson	Objectives	Date
01: *Carbon*	At the end of the lesson, the student will: ▪ Explain what organic compounds are and how they are formed ▪ Explain the difference between the molecular formula and the structural formula of some organic compounds	April/May

	and the bonds they form.	
02: *Hydrocarbons and their derivatives*	At the end of the lesson, the student will: ▪ Describe and explain what hydrocarbons are and the different types of hydrocarbons that are formed.	
03: *Biochemical compounds*	At the end of the lesson, the student will: ▪ Describe what biochemical compounds are and explain their characteristics and functions in living organisms.	**April/May**
01*: Chemical reactions*	At the end of the lesson, the student will: ▪ Express simple chemical reactions using word equations and chemical equations.	

This record is subject to change according to the needs of the students, given learning experiences and other factors that may arise.

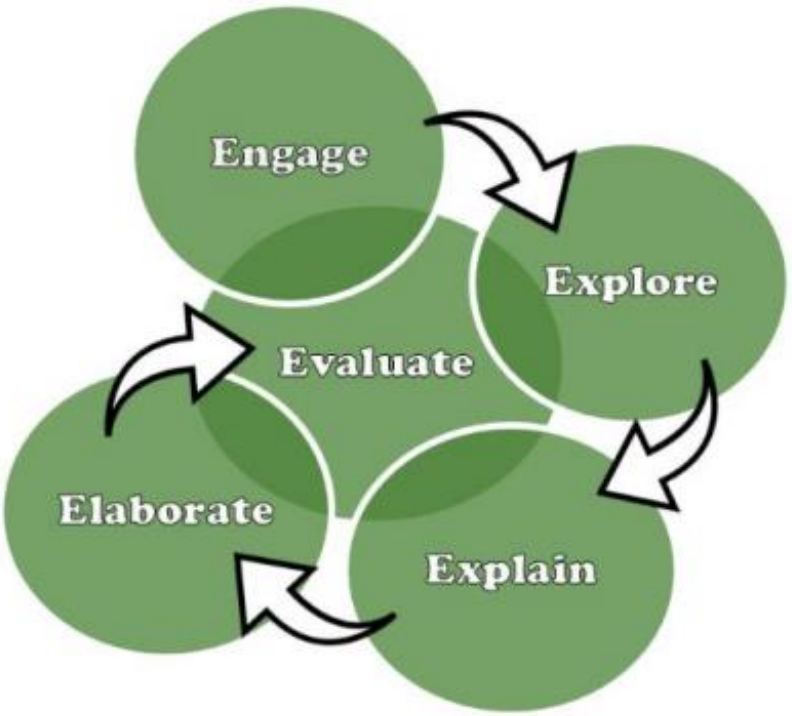
II . Reference books and teaching materials

- Module: Digital Edusystem Platform
- Curriculum Framework: Science Program
- Content Standards: Science
- Printed material
- Educational Links
- Technology equipment (computer, radio, projector)

Note: *Test dates, test fees, and the order presented may be subject to change, according to student needs*.

III. Instructional model

The structure, guidelines or model in which students engage in a particular content that ensures understanding of that content.



- It is based on the constructivist learning theory, which states that learners build or construct new ideas based on their experiences.
- It represents a recursive cycle of cognitive stages in inquiry-based learning.
- Stages are intended to be completed sequentially; however, you may revisit a stage more than once during
- the 5E process.
- Typically, NOT all five stages would be experienced in a single classroom period, but all five would certainly be embedded in a series of lessons that would develop a particular concept, lasting days or weeks.
- It is used to develop conceptual understanding over time with each stage building on the previous stage.

IV. Course requirement

- Know the criteria and the evaluation process on which your academic work will be graded.
- Bring the required materials to the classroom.
- Attend the Academy regularly and on time.
- Attend with complete and clean school uniform according to the student handbook.
- Bring written excuses when absent.
- Perform their academic duties responsibly.
- Make up assignments and evaluations covered in class when absent.
- Keep the classroom clean and their work area organized.
- Take care of classroom materials and equipment.
- Use appropriate and respectful language.
- Bring notices, permission slips, or other materials signed by their parent and/or guardian (forged signatures are prohibited).

V. Consequences hierarchy

1. Verbal Warning by Teacher
2. Student/Teacher Conference
3. Friendly Discipline Referral
4. Parent Phone Call
5. Parent/Teacher Conference
6. Official Discipline Referral

Exception: *There are circumstances in which the teacher may write a direct referral without parent contact. These include fighting, cursing, and/or disrespect to teacher.*

VI. **Special Notice**

Institutional Norms (*Should not be altered*)

- Evaluations are reported to students five days in advanced.
- No evaluations given on Mondays.

The teacher will have a period of ten working days to report the grades obtained to the students

Academia Santa Rosa de Lima,
Bayamón, Puerto Rico
Eighth Grade
Sciences

certification

I,_____father, mother or person in charge of the student _____, who is in the eighth grade, certify that I *have read in its entirety the Academic Record 2023 ~ 2024 of the subject of* ***Sciences***.

_____ _____

Signature of parent or person in charge ***Date***

_____ _____

Student Group - ***Signature***