



**Academia Santa Rosa de Lima  
Bayamón, P.R.**

**Academic Syllabus**

**Course: Science**

**Fourth Grade**

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**Teacher: Jessica Valentin Cintrón**

**School Year: August 2018- May 2019**

**I. Introduction and Course Structure**

The course **Science 4** is composed of ten units. Each unit is composed of lessons. Each is divided into sections that develop their individual topics. Each lesson contains a descriptive log, activities, worksheets and handouts that are related to the content and, as in most cases, website links and resources. It also proposes assessment exercises in order to help the students in different tasks. Through this course the students will have the opportunity to build their knowledge through the cognitive development of scientific keywords, principles and laws. The course also encourages the study of this discipline by putting scientific research, science skills, and the scientific method within the student's reach. The activities integrate a constructivist approach by encouraging more student participation in building of knowledge and the development of skills. The course also promotes and encourages the use of technology for students to be prepared for their future careers.

**Module:** Edusystem Digital Platform

**II. The Objectives of the Course**

The objectives of the course are:

- Promote learning through real life experiences.
- Encourage the use of information technology as a learning tool.
- Promote reflection and self-evaluation during the learning process.
- Promote experiences for the development and appreciation of science and the world around us.
- Integrate the different scientific disciplines, such as chemistry, physics, and biology, among others with disciplines from other fields.
- Encourage participation in scientific inquiry and the development of keywords, skills and scientific processes.
- Integrate standard and grade level expectations.
- Provide situations, activities, and exercises to actively build and apply knowledge to different situations.
- Encourage students to work with both concrete and abstract keywords.
- Contribute to the development of language as a means of individual and collective communication while incorporation of scientific vocabulary.
- Enrich the lessons with level appropriate documents, activities, and exercises.
- Highlight the scientific environment in accordance with grade level.

### III. Lesson Content

Introduction to Science		
Introduction		
Theme	Objectives Skills	Posibles fechas de examen / Valor
✓ Scientific Method	<ul style="list-style-type: none"> <li>✓ Apply the steps of the Scientific Method.</li> <li>✓ Recognize the skills to perform the science processes.</li> <li>✓ Recognize security measures in a science laboratory.</li> <li>✓ Identify instruments used in a laboratory.</li> </ul>	August 100%
Unit 1: Plants		
Theme	Objectives Skills	Posibles fechas de examen / Valor
<ul style="list-style-type: none"> <li>✓ Plants</li> <li>✓ Adventure Through the Plant Kingdom</li> <li>✓ A New Life</li> <li>✓ Natural Medicine</li> </ul>	<ul style="list-style-type: none"> <li>✓ Identify the main parts of a plant.</li> <li>✓ List the function of each part of the plant.</li> <li>✓ Draw a plant and identify its parts.</li> <li>✓ Explain the importance of plants on our planets.</li> <li>✓ Compare vascular and non-vascular plant.</li> <li>✓ List the characteristics of angiosperms and gymnosperms.</li> <li>✓ Distinguish between monocot and dicot plants.</li> <li>✓ Explain sexual and asexual reproduction in plants.</li> <li>✓ Identify the main parts of a flower.</li> <li>✓ Describe the process of pollination.</li> <li>✓ Define natural medicine.</li> <li>✓ Identify the advantages of natural medicine.</li> <li>✓ Name medicinal plants.</li> <li>✓ Describe the illnesses that can be treated with medicinal plants.</li> </ul>	August 100%

Unit 2: Animals		
Temas	Objectives Skills	Posibles fechas de examen / Valor
<ul style="list-style-type: none"> <li>✓ Animals</li> <li>✓ The Animal World</li> <li>✓ I Have a Skeleton!</li> <li>✓ Extinction is Forever</li> </ul>	<ul style="list-style-type: none"> <li>✓ Explain the classification of animals according to their characters.</li> <li>✓ List the characters of vertebrates.</li> <li>✓ Explain what is oviparate and viviparate.</li> <li>✓ Show appreciation and respect for animals.</li> <li>✓ Name the main characters of invertebrates.</li> <li>✓ Name different classes of vertebrates and invertebrates.</li> <li>✓ Identify characteristics and examples of worms, mollusks, echinoderms, and arthropods</li> <li>✓ Define what a vertebrate animal is.</li> <li>✓ Name the five groups in which vertebrates are classified.</li> <li>✓ Identify the characteristics of each of the five groups of vertebrates.</li> <li>✓ Show appreciation and respect for the conservation of vertebrates.</li> <li>✓ Define adaption.</li> <li>✓ Identify and explain the different types of adaption exhibited by organisms.</li> <li>✓ Analyze how adaptation relates with the survival of organisms.</li> <li>✓ Define extinct species and endangered species.</li> <li>✓ Distinguish between natural extinction and provoked extinction.</li> <li>✓ Identify the factors that can cause the extinction of a species.</li> <li>✓ List some endangered animals.</li> <li>✓ Offer ideas that would help diminish the problems species extinction.</li> <li>✓ Demonstrate affection and appreciation for animals.</li> </ul>	September 100%

Unit 3: Our Bodies		
Theme	Destrezas	Posibles fechas de examen / Valor
<ul style="list-style-type: none"> <li>✓ Our Bodies</li> <li>✓ The Cell- protagonist of life</li> <li>✓ I Need: To Eat and Breath</li> <li>✓ Our Body in OptimalCondition</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define Cell.</li> <li>✓ Identify the main parts of the cell.</li> <li>✓ Classify cells in two groups: animal parts.</li> <li>✓ List the differences between animal and plant cells.</li> <li>✓ Identify and explain the different levels of organization in the human body.</li> <li>✓ Define: cell, tissue, organ, and system.</li> <li>✓ Explain what some of the systems in the human body are made up of.</li> <li>✓ Identify the organs that make up the digestive system.</li> <li>✓ Identify the functions carried out by each of the organs in the digestive system.</li> <li>✓ Explain respiration.</li> <li>✓ Identify the organs that make up the respiratory system.</li> <li>✓ Identify which functions are carried out by each of the organs in the respiratory system.</li> <li>✓ Identify some illnesses that affect the digestive system.</li> <li>✓ Identify the practices that help keep the digestive and respiratory systems in good health.</li> <li>✓ Indicate the necessary factors for a healthy body.</li> <li>✓ Describe the functions of the five groups.</li> <li>✓ Eating habits</li> <li>✓ Indicate what exercises they practice.</li> <li>✓ Indicate the personal hygiene practices.</li> </ul>	October 100%
Unit 4: Energy and the Sources of Sound		
Theme	Objectives skills	Posibles fechas de examen / Valor
<ul style="list-style-type: none"> <li>✓ Let's Investigate Energy and Sound</li> <li>✓ Let's Explore Sound</li> <li>✓ Communicating with Animals</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define energy and sound.</li> <li>✓ List the types of energy and distinguish them from each other.</li> <li>✓ Provide examples of the types of energy.</li> <li>✓ Distinguish between renewable and non-renewable energy.</li> <li>✓ Mention and explain the different forms in which energy manifests itself.</li> <li>✓ Relate sound with the movement of matter.</li> <li>✓ Explain how one's own voice produces an echo.</li> <li>✓ Identify the state of matter that best transmits sound.</li> <li>✓ Explain what volume and intensity of sound consist of.</li> <li>✓ Identify "strong sounds, sharp sounds, and low sounds.</li> <li>✓ Indicate the difference between frequency and timbre.</li> <li>✓ Explain how the human ear detects sound.</li> <li>✓ List the parts of the ear.</li> <li>✓ Describe how animals use sound to communicate.</li> <li>✓ Define ultrasound.</li> <li>✓ Explain how ultrasound is used in medicine.</li> <li>✓ Explain what a sonogram consist of.</li> <li>✓ Explain what a sound level meter is.</li> <li>✓ Identify the sources of noise pollution in his or hers community and school.</li> <li>✓ Identify agents that help reduce noise pollution.</li> </ul>	November 100%

Ciencias Físicas		
Unit 5: Electricity Around You		
Theme	Objective Skills	Possible Date of Test / Value
<ul style="list-style-type: none"> <li>✓ Magnetic Pull</li> <li>✓ It's Electricifying!</li> <li>✓ Let's Save Energy</li> </ul>	<ul style="list-style-type: none"> <li>✓ Observe and mention the properties of magnets.</li> <li>✓ Mention how magnets are used.</li> <li>✓ Briefly describe the history of magnets and how they were used in antiquity.</li> <li>✓ Distinguish between two types of magnets: natural and artificial.</li> <li>✓ Define what a compass is and explain its use.</li> <li>✓ Relate atomic structure to the phenomenon of static electricity.</li> <li>✓ Define static electricity.</li> <li>✓ Describe and identify the parts of battery.</li> <li>✓ Describe what a power plant is.</li> <li>✓ Mention the three parts of power plants.</li> <li>✓ Explain the process of electrical production in a thermoelectric power plant.</li> <li>✓ Explain the importance of saving energy.</li> <li>✓ Offer recommendations for saving electrical energy.</li> <li>✓ Motivate to save electrical energy in the home, school, or community.</li> <li>✓ Promote the conservation and improvement of natural resources.</li> <li>✓ Identify alternatives that help preserve our natural resources.</li> </ul>	<p>December</p> <p>100%</p>
Unit 6: Light and Heat		
Theme	Objectives Skills	Possible Date of Test / Value
<ul style="list-style-type: none"> <li>✓ Light and Heat</li> <li>✓ Lighten Up!</li> <li>✓ I Spy, With My Little Eye</li> <li>✓ It's Hot Outside</li> </ul>	<ul style="list-style-type: none"> <li>✓ Describe the characteristics of light.</li> <li>✓ Explain how light behaves when it collides with matter.</li> <li>✓ Identify both artificial and natural sources of light.</li> <li>✓ Demonstrate and define: regular reflection, diffuse reflection, and refraction.</li> <li>✓ Identify the characteristics of a transparent object, a translucent object, and an opaque object.</li> <li>✓ Investigate what colors white light is made up of.</li> <li>✓ Show how a rainbow is made.</li> <li>✓ Define black and white colors from a visible spectrum.</li> <li>✓ Investigate how light affects vision and the objects we observe.</li> <li>✓ Identify the parts of a human eye.</li> <li>✓ List the function of each of the parts of the eye.</li> <li>✓ Recognize how eyesight is produced.</li> <li>✓ Prepare a list of the practices that help keep the eye healthy.</li> <li>✓ Define what heat is.</li> <li>✓ Identify the sources of heat.</li> <li>✓ Demonstrate and define the processes of heat transmission.</li> <li>✓ List some of the uses for heat in medicine.</li> <li>✓ Recognize the application solar system.</li> <li>✓ Recognize the importance of the Sun as a source of energy for Earth.</li> </ul>	<p>January</p> <p>100%</p>

### Unit 7: Adventure through the Solar System

Theme	Objective Skills	Date of possible Test / Value
<ul style="list-style-type: none"> <li>✓ Our Star: The Sun</li> <li>✓ The Moon and Constellations</li> <li>✓ Space Trip!</li> </ul>	<ul style="list-style-type: none"> <li>✓ Indicate what gases the Sun is made up of.</li> <li>✓ Indicate and describe both the internal and external parts of the Sun.</li> <li>✓ Explain how eclipses and auroras happen.</li> <li>✓ Describe solar phenomena such as sunspots and solar flares.</li> <li>✓ List Earth's layers.</li> <li>✓ Differentiate between interior planets and exterior planets.</li> <li>✓ Identify certain important aspects about the moon.</li> <li>✓ Describe the surface of the moon.</li> <li>✓ Mention and describe the phases of the moon.</li> <li>✓ Identify the relation between the Moon and the tides.</li> <li>✓ Define constellation.</li> <li>✓ Explain the origin of constellation.</li> <li>✓ Classify stars by temperature.</li> <li>✓ Define what a telescope is.</li> <li>✓ Define what a radio telescope is.</li> <li>✓ Recognize the history of space travel.</li> <li>✓ List and describe the celestial bodies.</li> </ul>	<p>February</p> <p>100%</p>

### Unit 8: Let's Explore Our Natural Resources

Theme	Objective Skills	Possible Date of Test / Value
<ul style="list-style-type: none"> <li>✓ Natural Resources</li> <li>✓ Let's Study Rocks</li> <li>✓ Grains and Sand</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define what a mineral is.</li> <li>✓ List the properties of minerals.</li> <li>✓ Give examples of minerals.</li> <li>✓ List minerals commonly found in Puerto Rico.</li> <li>✓ Localize, on a map of Puerto Rico, municipalities rich in mineral deposits.</li> <li>✓ Identify minerals.</li> <li>✓ Define what a rock is.</li> <li>✓ Mention the characteristics of igneous rocks, sedimentary rocks, and metamorphic rocks.</li> <li>✓ Understand the formational process of each of the three types of rocks.</li> <li>✓ Define Sand.</li> <li>✓ Observe samples of sand and mention some of their characteristics.</li> <li>✓ Classify sand by groups, according to origin.</li> <li>✓ Define beach.</li> <li>✓ Define dune.</li> <li>✓ List and describe the three coastal zones.</li> </ul>	<p>March</p> <p>100%</p>

Unit 9: The Oceans		
Theme	Objective Skills	Possible Dates for Test / Value
<ul style="list-style-type: none"> <li>✓ Water Everywhere</li> <li>✓ The Ocean and Its Wonder</li> <li>✓ Pollution Everyone's Problem</li> </ul>	<ul style="list-style-type: none"> <li>✓ Describe the water cycle.</li> <li>✓ Distinguish the processes of evaporation, condensation, precipitation, and solidification.</li> <li>✓ Distinguish between oceans and seas.</li> <li>✓ Explain what causes waves and ocean currents.</li> <li>✓ Describe what the surface of the bottom of the ocean is like.</li> <li>✓ Explain how scientists obtain information about the bottom of the ocean.</li> <li>✓ Mention and describe the different areas at the bottom of the seas.</li> <li>✓ Describe life in the ocean.</li> <li>✓ Give examples of sea organisms.</li> <li>✓ Demonstrate how life is distributed in the oceans.</li> <li>✓ Define coastal zone.</li> <li>✓ Describe life in the depths of the ocean.</li> <li>✓ Identify the sources of contamination that affect the ocean.</li> <li>✓ Describe the causes of an oil spill.</li> <li>✓ List the consequences of contamination of the ocean.</li> <li>✓ Design a strategy for cleaning up an oil spill.</li> </ul>	April 100%
Unit 10: Ecology and the Preservation of the Environment		
Theme	Objective Skills	Possible Dates of Test / Value
<ul style="list-style-type: none"> <li>✓ The Environment Around Us</li> <li>✓ Recuperate, Reduce, Reuse, and Recycle</li> <li>✓ Puerto Rico and Its Natural Resources</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define ecosystem.</li> <li>✓ Identify biotic and abiotic elements in different ecosystems.</li> <li>✓ Define what ecology is.</li> <li>✓ Show and explain what the elements of an ecosystem are.</li> <li>✓ Define forest.</li> <li>✓ Define recycling.</li> <li>✓ Explain the significance of the recycling symbol.</li> <li>✓ Identify recycling materials.</li> <li>✓ Define: lake, reservoir, and cave.</li> <li>✓ Mention the benefits of recycling for the environment.</li> <li>✓ List Puerto Rico's main reservoirs.</li> <li>✓ Describe the process of the formation of the cave.</li> <li>✓ Define conservation and contamination.</li> <li>✓ Define what a natural resource is.</li> <li>✓ Mention some of the natural resources that Puerto Rico possesses.</li> <li>✓ Mention which weather conditions affect our natural resources.</li> </ul>	May 100%

**Note:** The dates of the tests, their value, and the order of the lessons presented can be subject to changes because students necessities.

**Nota:** Las fechas de los exámenes, el valor de los mismos y el orden presentado puede estar sujeto a cambio, de acuerdo a las necesidades de los estudiantes.

#### **IV. Book References and Teaching Materials**

- Module: Edusystem Digital Platform
- Curriculum Map: Science Program
- Standards: Science
- Print Material
- Links Related to Education
- Technology Equipment (computer, radio, projector)
- Physical Installation (Laboratory and Library)

#### **V. Strategies, Techniques and Teaching Methods**

##### **Strategies**

- ECA
- Cooperative Learning
- Hands on Learning

##### **Techniques**

- Social Discussion
- Instructional Conversation/Vocabulary
- Demonstration
- Laboratory
- Virtual Laboratory
- Flipped Classroom
- Case Method

##### **Methods**

- Explore
- Inquiry
- Discover
- Problem Solution
- Cross Over Learning

## VI. Evaluation Methods: Instruments and Criteria

Assessment	Sumativo	Formativo
• Test	•	
• “Quizzes”	•	
• Homework	•	
• Laboratories	•	
• Oral Reports	•	
• “Collage”	•	
• Visual Clues/Pictures		•
• Cross Over Learning		•
• “Writing prompt”		•
• Debate		•

**Nota:** El 75% de la nota de la clase es de exámenes, “Quizzes”. El 25% de la misma será de Assessment. Estos porcentajes varían dependiendo del tiempo y de las necesidades de los estudiantes.

## VII. Course Requirements

- Students must be familiarized with the criteria and the process of evaluation of the class.
- The student must bring all school materials every day to the classroom.
- Assist regularly to class and be on time.
- The school uniform must be clean and used every day.
- If the student is absent, he or she must turn in a medical excuse.
- The student must be responsible with homework.
- Classroom must be clean and organized at all times.
- Be responsible with classroom material.
- Use proper and respectful vocabulary.
- Bring documents signed by parents or person in charge (document's falsification is prohibited).

**Nota:** Este documento puede estar sujeto a diversos cambios y modificaciones, tomando en cuenta las necesidades de cada grupo.



## **Academia Santa Rosa de Lima Bayamón, P.R.**

### **Academic Syllabus**

#### **Course: Science**

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### **Certification**

I, \_\_\_\_\_, father, mother or person in charge of \_\_\_\_\_

\_\_\_\_\_, a fourth grade student \_\_\_\_\_ certify I

have read The Academic Syllabus of Santa de Rosa de Lima Academy for the 2018-2019 **Science** Course.

Signature of: Father, Mother or Person in charge: \_\_\_\_\_

Student's signature: \_\_\_\_\_

Date: \_\_\_\_\_ / \_\_\_\_\_ /2018

**Nota:** Favor de imprimir la boleta y devolver a la maestra de **Ciencias** durante la primera semana de clases.