

COURSE PLANS

UNIT 8

1. BASIS

In this unit we will study energy and the changes that energy and force produce in matter and ultimately, in the world around us. We will go deeper into the concept of energy, naming the various ways in which it occurs and specifying the physical and chemical changes that are produced in matter. The project explains the process involved in making a cake.

May

2. METHODOLOGY

As they work through this unit, pupils will be able to learn about some of the forms energy can take and relate them to natural phenomena; recognise physical and chemical changes in the environment; identify changes of state; define force and learn about some of its effects and consequences.

CONTENTS	EVALUATION CRITERIA	LEARNING STANDARDS
<ul style="list-style-type: none"> • Energy and its characteristics. • The forms energy can take. • Energy and the changes it produces. • Types of change: physical and chemical. • Heat and temperature. • Effects of heat on objects: size variations and temperature changes. • Changes of state and heat. • Types of force. • Effects of forces: deformations and changes in movement. • Performing experiments to observe expansion of solids, liquids and gases. • Carrying out changes of state experiments. • Differentiate between mass and weight. • Understanding information, learning vocabulary, using language as a tool for communication and keeping a positive attitude towards reading. • Knowledge of and use of mathematical operations and mathematical 	<p>1. Expand the notion of energy, know about its characteristics and forms it takes, and describe changes, identifying forms of energy that cause them.</p>	<p>1.1. Define energy, describe its features, and identify forms it takes. Describe forms of energy.</p> <p>1.2. Name and describe natural phenomena and others in the immediate environment, identifying the forms of energy that cause them.</p>
	<p>2. Differentiate between physical changes and chemical changes, describe and identify them in the environment.</p>	<p>2.1. Define physical change and chemical change. Recognise and describe physical and chemical changes in the environment.</p>
	<p>3. Reinforce the concepts of heat and temperature and learn about changes produced by heat on objects, such as changes of state, integrating this new knowledge with other prior knowledge, such as the water cycle.</p>	<p>3.1. Define heat and temperature. Name instruments and units to find out the temperature. Identify, name and describe changes produced by heat.</p> <p>3.2. Name the changes of state and recognise them in experiments and events in the environment, such as the water cycle, and describe the increase or loss of heat to explain changes of state.</p>
	<p>4. Define contact forces and action-at-a-distance forces, and know their effects on objects.</p>	<p>4.1. Define force and know the effects or consequences of different forces. Differentiate between contact forces and action-at-a-distance forces.</p> <p>4.2. Identify the actions of force and their consequences or effects through experiments and in the environment. Characterise and</p>

<p>strategies to resolve problems.</p> <ul style="list-style-type: none"> • Understanding social reality and showing respect towards society and nature. • Knowledge and responsible use of ICT to investigate matter. • Using strategies to process information and applying it to different contexts. • Initiative and perseverance in tackling problems and defending opinions, developing attitudes of respect and collaboration when working together. 		<p>classify objects according to their behaviour when forces act on them.</p>
	5. Encourage observation and the formulation of hypothesis through experiments.	5.1. Show interest in studying physical phenomena and formulating hypotheses that explain them.
	6. Differentiate between mass and weight, and learn about the instrument and a unit of measure to measure force.	6.1. Define the weight of an object. Name an instrument and unit of measure to measuring force.
	7. Understand information, acquire vocabulary about energy and force, express knowledge and opinions both orally and in writing and show interest in reading texts and exploring to discover more about energy and force.	7.1. Understand information, acquire vocabulary about energy and force, express knowledge and opinions both orally and in writing and show interest in reading texts and exploring to discover more about energy and force.
	8. Apply mathematical operations and strategies to calculate weight.	8.1. Apply mathematical operations and strategies to calculate weight.
	9. Know and use ICT in a responsible way and use strategies to process information and apply it to different contexts, actively participating in their own learning process.	9.1. Obtain and organise information, working with the unit structure, and using digital resources with interest and responsibility.
	10. Show initiative and perseverance in tackling problems and defending opinions, developing attitudes of respect and collaboration when working together in a group.	10.1. Show initiative, accept mistakes when doing self-evaluation, persevere in reinforcement tasks and actively participate in cooperative learning exercises.

3. COMPETENCIES

COMPETENCIES	CONTENTS AND ACTIVITIES BY COMPETENCY
Linguistic competency.	<p>Grasping the meaning of oral expressions: orders, explanations, instructions, relating accounts ...</p> <p>Understanding the teacher's explanation about the project to make a cake.</p> <p>Reading the initial reading and the recommended texts in the reading plan.</p>
Mathematical competency and basic competencies in Science and Technology.	<p>Using knowledge of science and technology to solve problems and understand what is happening around us</p> <p>Recognising the different forms of energy in natural phenomena.</p>
Digital competency.	<p>Using digital tools to build knowledge.</p> <p>Searching the web for information about hot-air balloons.</p>
Learning to learn.	<p>Developing strategies that encourage the rigorous understanding of content.</p> <p>Giving concrete examples of everyday situations in which there is a change of state.</p> <p><i>Multiple Intelligences:</i> Explaining a very common type of deformation after observing and reflecting on it, developing, in particular, the natural and scientific, and logical-mathematical intelligences.</p>
Social and Civic competencies.	<p>Demonstrating concern for the underprivileged and respect for different potential and ways of learning.</p> <p>Empathising with peers with have less skill and helping them to perform a task.</p> <p><i>Values:</i> Being responsible when using the time in the laboratory.</p>
Sense of initiative and entrepreneurial spirit.	<p>Taking risks in developing the projects or tasks.</p> <p>Trying to explain why some objects form shadows</p>
Cultural awareness and expression	<p>Appreciating the beauty of artistic expression and in everyday things.</p> <p>Recognising the beauty of some natural phenomena where energy is manifested such as lightning.</p>