COURSE PLANS

UNIT 9.

1. BASIS

This study about machines integrates the knowledge learned about matter and energy in relation to the creation of new and old machines, both simple and compound. The unit is divided into four main sections: what machines are and the different forms of energy used in their operation; simple machines (lever, pulley, inclined plane and wheel) and the combination of these with other parts to create compound machines; old machines and their evolution over time; some modern machines at work, in industry, for leisure and communication. The projects cover inventing a new machine and making a pulley.

May: ☐☐☐■ June: ■■☐☐

2. METHODOLOGY

As they work through the unit, pupils will be able to define machines, identify some of their parts and give a basic description of how simple machines work; differentiate simple machines from compound machines; acquire a basic idea of the evolution of machines over time, know some examples of machines that made history and identify the most important machines today; recognise the importance of technology for individuals and for society; know and use ICT in a responsible way to process information, assimilate knowledge and apply it to different contexts.

CONTENTS	EVALUATION CRITERIA	LEARNING STANDARDS
• Machines and the energy they need to work. • Identification of machines in the immediate surroundings and the forms and sources of energy they use to work. • Simple machines and their parts: ramp, levers, rollers and wheels. • Identification and description of the operation and parts of simple machines. • Compound or complex machines. Motors and their types. Other compound machines. • The evolution of machines over time. • Current machines and the human activities for which they are used. • The importance of machines in today's societies. • Machines that have made history. • Invent a new machine. • Make a pulley. • Assessment of scientific and technological knowledge as dynamic and cumulative facts.	1. Acquire the notion of machines, identify the force and origin of the energy needed to run machines, and know about some simple machines, their components and how they work.	1.1. Define machine. Identify the sources of energy that run machines in your surroundings. 1.2. Identify the parts and describe the operation of simple machines: inclined plane, lever, wheel, roller and pulley.
	2. Acquire the notion of the motor, know different types of motors and other complex machines, and perform experiments to stimulate curiosity, attention, and appreciation of the parts of machines and describe how they work.	2.1. Define motor. Differentiate types of motor according to the source of energy they use to work. Name and identify other compound machines. 2.2. Show interest and concentration during the experiments and observations of machines.
	3. Understand and appreciate technological knowledge as a progressive accumulation of inventions made by human beings over time, and expand knowledge through the study of some machines that have changed societies and lifestyles.	3.1. Learn about simple machines invented and used since ancient times. Describe the importance of the wheel and the first gears and transmissions. 3.2. Know about and name machines that have changed the way of life of societies, discover others and describe the changes they caused.

	4. Know about groups of human activities and the machines used; identifying also the type of motors and the sources of energy they use to work.	4.1. Name agriculture, livestock, fishery, industrial and domestic activities, transport, communications ... and representative machines used in them.
	5. Invent a new machine.	5.1. Use creativity to invent a new machine.
	6. Understand information, acquire vocabulary about using machines, express knowledge and opinions both orally and in writing and show interest in reading texts related to technological advances.	6.1. Understand information, acquire vocabulary about using machines, express knowledge and opinions both orally and in writing and show interest in reading texts related to technological advances.
	7. Know and apply how a pulley works.	7.1. Follow step-by-step instructions to make a pulley and test how it works.
	8. Know about and use ICT in a responsible way and use strategies to process information, assimilate it as knowledge and apply it to different contexts, actively participating in their own learning process.	8.1. Obtain and organise information, working with the unit structure, and using digital resources with interest and responsibility.
	9. Show initiative and perseverance in tackling problems and defending opinions.	9.1. Show an entrepreneurial spirit, 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.	Understanding the meaning of written texts. Follow and apply step-by-step instructions to make a pulley. Reading the initial reading and the recommended texts in the reading plan
Mathematical competency and basic competencies in Science and Technology.	Using knowledge of science and technology to solve problems and understand what is happening around us. Explaining how some simple machines work.
Digital competency.	Applying ethical standards in the use of technology. Using ICT responsibly when looking for information to carry out various tasks.
Learning to learn.	Assessing the achievement of learning objectives. Validating achievements in their learning process. *Multiple Intelligences:* Making a very simple machine, promoting the development of their natural and scientific and spatial intelligences
Social and Civic competencies.	Demonstrating concern for the underprivileged and respect for different potential and ways of learning. Respecting and helping peers who have more difficulties in learning. *Values:* Learning to behave correctly according to different values. Using machines in a responsible way
Sense of initiative and entrepreneurial spirit.	Having a realistic and ambitious vision of the future. Proposing a new invention or machine, drawing a picture and labelling it and presenting it to the class.
Cultural awareness and expression	Developing work and presentations with aesthetic sense. Preparing a project to create a pulley and taking photos to present it to the class.