



CICLO LECTIVO 2018
ÁREA: Cs Exactas y Naturales

PROFESORA: Martina Pernigotti

CURSO: 3°

DIVISIÓN: A y B

BIOLOGY YEARLY PLAN

Fundamento epistemológico de la materia: Epistemological fundament for the subject:

Science is realistic and rational up to a certain extent. It is fundamental to understand that the criteria used by science are evolutionary and consensual and that the validity of the scientific models are evaluated from the most objective and reliable possible perspective.

In this framework, natural sciences are taught not as absolute truths, but as a powerful and rigorous way of intervening in the real world with thought, discourse and action, generating a critical image of current science that values its scope and limitations.

GENERAL AIMS:

- To interpret and analyse daily life phenomenon and facts through the sciences that make up the area, enhancing its real value.
- To foster debate and collaboration among peers.
- To learn concepts through lab practice and investigation.
- To search for different technological tools available.
- To acquire a sound scientific culture, resulting in more responsible citizens.

SKILLS TO BE DEVELOPED:

- Communication (C)
- Critical thought, initiative and creativity (CT, I&C)
- Analysis and comprehension of information (A&CI)
- Problem solving (PS)
- Social interaction, collaborative task (SI&CT)
- Responsible citizens (RC)
- Rating art work (RAW)
- Self care, personal development, independent learning (SC, PD & IL)

UNITS	AIMS	CONTENTS	SKILLS/ ACTIVITIES
UNIT 1.1: Molecular genetics. Genetic information and its expression	Learn about the inheritance main biomolecule, its structure and composition. Connect (differences and similarities) of the DNA and RNA's structure and function. Name and describe the different ways of organization of DNA. Link the concept of gene with the poly-peptide or protein. Name, identify and relate the	1.1.1. DNA and RNA 1.1.2. DNA replication 1.1.3. Transcription 1.1.4. Translation	1.1.1. CT, I&C, A&CI Video use to learn about nucleic acid' structure. 1.1.2. y 1.1.3. CT, I&C RAW PS The use of cell model to trigger dialogue questions and answers to identify key concepts. 1.1.2. CT, I&C RAW PS Activity using cloth pins and ropes to determine the structure of DNA and

	transmission of genetic information from DNA to proteins.		RNA 1.1.4. CT, I&C RAW PS Activity using cloth pins and ropes to determine the passway of genetic information from DNA to RNA to proteins. 1.1.4. 1.1.5. y 1.1.6. A&CI Viewing of animations of the processes of DNA replication, transcription and translation.
UNIT 1.2: DNA mutations	Link the DNA replication mechanisms to the concept of mutation. Link the mutagens' effect to cancer and malformation. Consider cancer as a cluster of conditions caused by multiple factors, with variable evolution and prognosis.	1.2.1. Mutation 1.2.2. Mutagenes 1.2.3. Genetic and chromosome mutations 1.2.4. Cancer	1.2.1 .CT, I&C y A&CI Viewing of 3D animations about mutations 1.2.2. A&CI y SI&CT Use of karyotypes to observe trisomies. 1.2.4. C, CT, I&C, A&CI, SI&CT RC SC, PD & IL Group poster production on the symptoms and prevention of cancer.
UNIT 2.1: Homeostasis	Learn about homeostasis and the relation function and differentiate them from nutrition and reproduction function. Name and characterize the function of the body systems which participate in homeostasis. Define and give examples of homeostasis.	2.1.1.Relation function. 2.1.2.Relation function systems 2.1.3.Homeostasis 3.1.4. Homeostasis mechanisms: feedback,the plasma membrane, etc..	3.1.1. C, CT, I&C, A&CI, SC, PD & IL Diagram construction on the relation function systems.
UNIT 2.2. Endocrine system	Understand hormones as chemical signals triggered by particular stimuli. Name and describe the function, synthesis and action mechanisms of main hormones. Locate in the body the main endocrine glands. Learn about the role of hormones in the sexual differentiation and growth of individuals.	2.2.1. Hormones and their mechanism. 3.2.2. Main hormone synthesis glands and target cells/tissues. 3.2.3.Growth and sexual development	2.2.1. Description of differents hormonal pathways through different examples. 3.2.3. CT, I&C, A&CI, SI&CT RC SC, PD & IL Sexuality project: Hormonal effect in the development of secondary sexual characters. 3.2.4. C, CT, I&C, A&CI, SI&CT RC SC, PD & IL

	Link the different types of hormonal contraceptives and their effect on the female hormonal cycle.	hormones. 3.2.4. Female sexual cycle and the hormonal contraceptives' mechanisms of action.	Sexuality project: Poster creation about the female hormonal cycle and the hormonal contraceptives' effects.
Unit 2.3. The nervous system	Learn that what reaches the nervous system is done through the senses. Name, locate and understand the functions of the main types of receptors. Differentiate the Central Nervous System from the Peripheral one, their characteristics and differences. Name, relate and describe the neuron's parts, its location and mechanism of action. Name the Central and Peripheral Nervous Systems parts and describe their functions. Name and give examples of stimuli - response in the Nervous System.	2.3.1.The integration of stimuli: the senses. 2.3.2. Information, receptors and transmitters. 2.3.4. Central Nervous System: parts and functions. 2.3.5. The Peripheral Nervous System: parts and functions. The PNS sympathetic and parasympathetic. 2.3.6. Action Potential 2.3.7. Neuron synapse 2.3.8. Examples of the Nervous System at work.	2.3.1. C, CT, I&C, A&CI, SI&CT SC, PD & IL Blindfolded experience (touch, taste, smell, and hearing) to describe what happens in the Central Nervous System. 2.3.3. CT, I&C, A&CI, Video viewing that shows the neuron' structure and synapse. 2.3.8. C, CT, I&C, A&CI, SI&CT RAW SC, PD & IL Infographics production to explain the reaction of the NS when facing certain stimuli.
Unit 2.4. Immune system	Define the different types of lines of defence according to their location and characteristics. Examples. Name, locate and describe the main functions of the Immune System cells. Describe the structure and the type of molecule of the antibody (its recognition by the antigen) Establish the main differences between innate and acquired immunity. Name and describe the most frequent autoimmune diseases.	3.4.1. Types of defences: external and internal, specific and unspecific 3.4.2.Cellular immunity and its cells. 3.4.3. Humoral immunity and antigen-antibody complex. 3.4.4. Innate and	4.4.1., 4.4.2. , 4.4.3. , 4.4.4. CT, I&C, A&CI, PS SC, PD & IL Videogame using to learn about the immune system cells (xentinelas celulares) 3.4.5. C, CT, I&C, A&CI, PS SI&CT RC RAW SC, PD & IL Sexuality project: HIV/AIDS awareness campaign. 3.4.6. C, CT, I&C, A&CI, SI&CT RC SC, PD & IL Poster design including official vaccination calendar, historical process, mechanism of action, dosis, etc.

	<p>Name the HIV target cell, mechanisms of action and main characteristics.</p> <p>Differentiate between HIV carrier and AIDS sufferer.</p> <p>Describe the vaccination mechanism of action and link it to the acquired immunity.</p> <p>Learn about the Argentine vaccination system and compare with other countries.</p>	<p>acquired immunity.</p> <p>3.4.5. Immune system conditions: autoimmune and HIV/AIDS</p> <p>3.4.6. Vaccines</p>	
<p>UNIT 3.1.</p> <p>The ecosystem</p>	<p>Name and describe the biotic and abiotic factors that make up the ecosystem.</p> <p>Name and describe the different factors used to measure and predict the population development in a given ecosystem.</p> <p>Recognise in given examples, the inter and intraspecific relationships taking place in the ecosystem.</p> <p>Identify external factors which might modify the ecosystem.</p> <p>Propose models of intervention and sustainability of urban ecology.</p>	<p>2.1.1. Ecosystem components.</p> <p>2.1.2. Population dynamics.</p> <p>2.1.3. Inter and intraspecific relationships.</p> <p>2.1.4. Flow of energy and matter.</p> <p>2.1.5. Food nets and chains.</p> <p>2.1.6. Factors affecting biodiversity: climate, human activities, natural disasters.</p> <p>2.1.7. Urban ecology.</p>	<p>2.1.1. CT, I&C, A&CI, Video viewing on population dynamics.</p> <p>2.1.1. CT, I&C, A&CI, PS SC, PD & IL Use of a population dynamics simulator.</p> <p>2.1.7. C, CT, I&C, A&CI, PS SI&CT RC SC, PD & IL</p> <p>Interdisciplinary project: Urban ecology project.</p>
<p>Bibliography</p> <p>- <i>Science Bits</i> platform.</p> <p>-Teacher's powerpoints</p>			