

Course Unit	Life Sciences		Field of study	Training in Teaching Area	
Bachelor in	Basic Education		School	School of Education	
Academic Year	2023/2024	Year of study	2	Level	1-2
Type	Semestral	Semester	2	ECTS credits	4.0
Code	9853-531-2201-00-23				
Workload (hours)	108	Contact hours	T -	TP 18	PL 18
			TC -	S -	E -
			OT 9	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Paulo Miguel Mafra Gonçalves

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Develop some techniques and basics concepts of laboratory work.
2. Identify biological molecules (composition and functions) and discuss the structure of nucleic acids and their functional implications.
3. Distinguish prokaryotic cells of eukaryotic cells; animal cells of plant cells and understand the implications of these functional differences.
4. Identify the key cellular structures (ribosomes, mitochondria, chloroplasts, etc.) and meet their essential functions (protein synthesis, cellular respiration, photosynthesis).
5. Describe the phases of nuclear division / cell multiplication (mitosis and meiosis) and discuss the importance of reducing the number of chromosomes (meiosis) in the formation of sex cells.
6. Justify the importance of the stages of nuclear division in the process of heredity.
7. Understand concepts of anatomy and physiology of the human body (body systems) and relate the morphology of organs and systems with the functions they perform.
8. Recognize that the functioning of the human body is dependent on feedback mechanisms and homeostasis.

Prerequisites

Before the course unit the learner is expected to be able to:
Does not have

Course contents

Some techniques and basics concepts of laboratory work; Structure, chemical composition and function of biological molecules; Major nutrients and their importance to the body; Cellular organization and function of cell components; The cell to the Man: Multiplication cell - mitosis and production of germ cells - meiosis; Some body systems; Regulation at the level of the human body (homeostasis and feedback).

Course contents (extended version)

1. Preparations temporary/permanent and coloring/assembly techniques. Microscope and loupe - Functions.
2. Biological molecules.
 - Structure, constitution and function of protein, carbohydrate, lipids and nucleic acids.
 - Essential nutrients to the body and its functions.
3. The cell: Chemical composition of the cell and cellular organization.
 - Prokaryotic and eukaryotic cells; plant and animal cells - similarities and differences.
 - Main cellular structures and their functions.
4. The cell to multicellular organism. Nuclear division/cell multiplication.
 - Multiplication cell - mitosis.
 - Production of germ cells - meiosis.
 - Cell Cycle: Interphase and division/cell multiplication.
5. Regulation at the level of the human body and some systems that make it up.
 - Digestive system: Morphology, physiology and associated diseases.
 - Circulatory system: Morphology, physiology and associated diseases.
 - Respiratory system: Morphology, physiology and associated diseases. Gills and aquatic breathing.
 - Excretory system (urinary and skin): Morphology, physiology and associated diseases.
 - Reproductive system: Morphology, physiology and diseases. Fecundation, pregnancy and childbirth.
6. Regulation at the level of the human body.
 - Concept of homeostasis and feedback.
 - Mechanisms to regulate hormone.

Recommended reading

1. Amabis, J. & Martho, G. (2007). Fundamentos da Biologia Moderna. S. Paulo: Editora Moderna.
2. Gilbert, S. F. (2003). Biologia do Desenvolvimento. Ribeirão Preto: Editora FUNPEC.
3. Linhares, S. & Gewandszajder, F. (2003). Biologia Hoje 1, 2 e 3. São Paulo: Editora Ática.
4. Lopes, S. (2010). Bio, volumes: 1, 2 e 3. São Paulo: Editora Saraiva.
5. Paulino, R. (2007). Biologia, volumes: 1, 2 e 3. São Paulo: Editora Ática.

Teaching and learning methods

Some classes will have a theoretical/illustrative aspect with presentation by the teacher and punctual intervention of the students. There will also be classes with topics for discussion, promoting the participation of all students, and others with a practical character, where will be carried out laboratory activities and made observations to binocular magnifying glass and optical microscope.

Assessment methods

1. Continuous Evaluation - (Regular, Student Worker) (Final)
 - Intermediate Written Test - 70% (Two written tests on the theoretical component.)
 - Practical Work - 30% (Reports of the work done in practical classes.)
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
 - Final Written Exam - 70% (A written final exam will focus only on the theoretical component.)
 - Reports and Guides - 30% (Reports of practical classes (grade obtained in the continuous evaluation).)

Language of instruction

Portuguese

Electronic validation			
Paulo Miguel Mafra Gonçalves	Adorinda Maria Rodrigues Pereira S. Gonçalves	Maria Cristina do Espírito Santo Martins	Carlos Manuel Costa Teixeira
14-02-2024	17-02-2024	25-03-2024	27-03-2024

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