School of Agriculture
Course Unit Syllabus

Level of qualification:
First cycle (EQF level 6) - Bachelor
Study cycle:
Bioanalytical Technologies

Course Unit: **15708** – **Biology**

Year 1 **Semester 2** **ISCED Code: 511** **ECTS: 5,0**

Tipe of Course Unit: Compulsory **Delivery Mode:** Face-to-face **Language of Instruction:** Portuguese

COURSE COORDINATOR: Luís Mendonça de Carvalho

HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
125	**30**		**30**						**65**

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

Understand the relationship between structures versus cellular functions.

Understand two of the structural metabolic pathways of living phenomena (photosynthesis and cellular respiration).

Understanding the pathways of conservation and synthesis of genetic material (DNA, RNAs)

CONTENTS

History of biology. Cell theory. Cellular organization. Cell wall. Cytoplasmic membrane. Transmembrane transport. Cytoskeleton. Smooth and rough endoplasmic reticulum (constitution and functions). Golgi apparatus (constitution and functions). Lysosomes (constitution and functions). Peroxisomes (constitution and functions). Glioxysomes (constitution and functions). Vegetable cell vacuole (constitution and functions).

Breathing and fermentation. Mitochondria (constitution and functions). Cycle of citric acid. Electron transport chain. Chemiosmotic theory. Chloroplast (constitution and functions). Photosynthesis. Plants.

C3, C4 and CAM. Nucleic acids. Genetic code. Mitosis and meiosis.

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

In this curricular unit it is intended that the graduate understands and integrates, in his knowledge, the main functions of a cellular unit. The program contents were selected to allow a clear pursuit of the objectives, namely, giving strong emphasis to functional and structural cytology component and to the development of laboratory practices that allow in vivo knowledge of cellular structures.

TEACHING METHODOLOGIES

The syllabus contents are taught in theoretical classes and in laboratory practices that enable trainees to achieve solid learning

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

Theoretical classes are complemented with practical classes that allow the execution of experimental protocols that are fundamental for the teaching-learning process and for the consolidation of the knowledge acquired in the theoretical classes. This is a common practice in all higher education institutions, with particular emphasis on the knowledge taught and acquired in the laboratory

EVALUATION METHODS

Final exam.

MAIN BIBLIOGRAPHY

Azevedo, C. (2005). Biologia Celular. Edições Lidel, Lisboa.

Pollack, G. (2001). Cells: A New, Unifying Approach to Cell Function. Ebner and Sons Publishers, New York.

Robertis, E. (1996). Biologia Celular e Molecular. Fundação Calouste Gulbenkian, Lisboa.

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