

Course Unit: 93501 - Biology

Year 1 Semester 1 ISCED Code: 511 ECTS: 6

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

COURSE COORDINATOR: João Martim de Portugal e Vasconcelos Fernandes

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	
150	30		30						90

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

- Understanding the relationship between structures versus cellular functions.
- Understanding the two main biochemistry pathways of cells (photosynthesis and cellular respiration).
- Understanding the process of conservation and synthesis of genetic material (DNA, RNA)

CONTENTS

History of biology. Cell theory. Cellular organization. Cell wall. Cytoplasmic membrane. Transmembrane transport. Cytoskeleton. Rough and smooth endoplasmic reticulum (constitution and functions). Golgi apparatus (constitution and functions). Lysosomes (constitution and functions). Peroxisomes (constitution and functions). Glioxissomas (constitution and functions). Vacuole plant cell (constitution and functions). Respiration and fermentation. Mitochondria (constitution and functions). Citric acid cycle. Electron transport chain. Chemiosmotic theory. Chloroplast (constitution and functions). Photosynthesis. C3 plants, C4 and CAM. Nucleic acids. Genetic code. Mitosis and meiosis.

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

In this unit we intend that students understand the main functions of a unit cell. The course contents were selected to permit a clear achievement of the objectives, namely, giving strong emphasis to the component of functional and structural cytology and development of laboratory practices that help to provide an in vivo view

TEACHING METHODOLOGIES

The course contents are taught in lectures and laboratory practices that allow the graduates to acquire a well

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

Lectures are complemented with practical sessions that allow the execution of experimental protocols, which have a central role in the process of teaching and learning and help to consolidate the knowledge acquired in the lectures. This practice is a common methodology in all institutions of higher education, with particular emphasis on 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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