UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Introduction to Life Sciences

Academic Year 2023/2024

1. Organic Unit

Institute of Psychology and Educational Sciences

2. Course

PSYCHOLOGY

3. Cycle

1st

4. Course Unit

Introduction to Life Sciences (20302)

5. Scientific Area

6. Curricular Year

1st

7. Type of Curricular Unit / Semester

1st Semester

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8. Class type and workload (work time)

Theoretical classes:	
Practical classes:	
Theoretical-Practical Classes	30,00
Tutorial Guidance:	

9. ECTS Credits

6,00

10. Scientific Area Coordinator

11. Regent

Prof. Doutor MANUEL CARLOS DO ROSÁRIO DOMINGOS

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

This curricular unit aims to provide theoretical and practical knowledge that allows students to learn, in an integrated manner, the anatomical and functional mechanisms that sustain mental activity, in its various domains, understanding the meaning, philosophy and dynamics of the bio-psycho- human being social.

15. Specific Objectives

Enlighten students about the tangle of biological systems, sub-systems and infra-systems (nervous, endocrine, immunological and sensory) involved in sustaining mental activity.
However, greater emphasis is placed on understanding how the brain participates in what we feel, perceive, learn, memorize, think, and express.

16. Skills to be acquired

Students should acquire skills that allow them to know the steps of brain organization throughout ontogenesis and realize that relationship life will only be possible through a constant, intrinsic and social dialogue, animated by a progressive and enriching eclecticism of the SELF.

17. Teaching Methodology

The teaching of this curricular unit will be based on expository and interactive methods, on the commented visualization of thematic DVDs, on the analysis of texts and on a laboratory practice, which closely complements the theoretical contents.

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18. Course Unit Program

I - Theoretical component:

1. Concepts about neurosciences. Historical data. Objectives, areas, scope and limits.

2. Impact of neurosciences on the knowledge of the bio-psycho-social dimension of the human being.

3. General information about the functional organization of the nervous system and its relationship with other anatomical and functional structures (eg cardio-vascular and respiratory systems).

4. Neuroanatomy-Functional
4.1. neuroembryogenesis
4.2. Protective and nourishing structures: skin, skull, meninges, cerebrospinal fluid, blood-brain barrier and vascular circulation.
4.3. Neurocytology and Neurohistology: neurons and glial cells. Importance of astrocytes in cognitive dynamics.
4.4. Bases of neurochemistry. Neurotransmission and mental activity.
4.5. Nerve transmission: action potential and synaptic activity. The Nernst equation.
4.6. Organization-Functional of the brain:
4.6.1. Brain stem and cerebellum
4.6.2. Diencephalon. Limbic system.
4.6.3. Telencephalon:
4.6.3.1. Cerebral cortex, basal ganglia and connecting pathways (afferent and efferent. Interhemispheric, intrahemispheric and cortical-subcortical. Concept and examples of sulci, clefts, tents and convolutions.
4.6.3.2. Lobar organization. The prefrontal area and its functional specificity, in the cognitive, emotional and behavioral context.
4.6.3.2. Interhemispheric asymmetries. Reflections on the concept of dominance, in the absolute sense of the term: what was is no longer!?
4.6.3.3. Functional neuroanatomy of cognition, behavior, emotions, and personality. The functional model of A.R. Luria.
4.6.3.4. The issue of Consciousness: unitary or multidimensional phenomenon?

5. Bases of genetics and neurogenetics.

6. Functional anatomy fundamentals of the endocrine system.

7. Introduction to the immune system. Neuropsychoimmunology.

8. Sense organs.

9. Final considerations: the neuropsychology of everyday life: from normal to dysfunctional.

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II - Practical component (laboratory):

1. Methods and techniques of laboratory investigation in Neurosciences

2. Microscopy: live cells, neurons, glia and blood vessels.

3. Dissection and identification of brain structures (pig and sheep).

4. Viewing films on the brain/behavior theme.

19. Assessment Methods

It will be based on 2 moments of written evaluation (Mini-Tests) and commented reading of texts alluding to the syllabus.

20. Didactic Resources

Internet sites and multimedia technologies related to Neurosciences, PPTs, laboratory material and hospital visits.

21. Sustainability Objectives

Eradicate poverty

Quality health

Quality education

22. Keywords

Neurosciences
Neuron
Glia
Nervous tissue
Brain
Cognition
Neuropsychoimmunology

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23. Main Bibliography

Author(s):	Diego Redolar Ripoll		
Title:	Neurociencia Cognitiva		
Edition:	1ª	Year:	2013
Local:	España		
Publisher:	Editorial Médica Panamericana		

Author(s):	Jon Turney (Autor), Alejandro Pareja Rodríguez (Traductor)		
Title:	La Biblia de la Neurociencia.		
Edition:	1ª	Year:	2019
Local:	Madrid		
Publisher:	Eds. Gaia - Collection Bilblias		

Author(s):	Luís Bigotte de Almeida		
Title:	Introdução à Neurociência		
Edition:	2º	Year:	2018
Local:	Lisboa		
Publisher:	Climepsi		

24. Complementary Bibliography

Author(s):	Damásio, António		
Title:	O Livro da Consciência		
Edition:	1ª Edição	Year:	2010
Local:	Lisboa		
Publisher:	Temas e Debates		

Author(s):	Daniel Gómez Domínguez		
Title:	Neurociencia Estructura y funciones del cerebro		
Edition:	1ª	Year:	2020
Local:	Madrid		
Publisher:	‎ Libsa		

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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'INTRODUÇÃO ÀS CIÊNCIAS DA VIDA': Academic Year 2023/2024
Autor / Author	Prof. Doutor MANUEL CARLOS DO ROSÁRIO DOMINGOS
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
Data Hora / Date Time	
Formato de dados / Data Format	Texto / Text, PDF
Estatuto de utilização / Usage	Acesso público / Public Access
Relação / Relation	Version 1,0

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