

COURSE OUTLINE

1. GENERAL

SCHOOL	NATURAL SCIENCES		
ACADEMIC UNIT	BIOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	BIO_EΦN	SEMESTER	G
COURSE TITLE	BRAIN AND MIND		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Lectures	2	3	
COURSE TYPE	Scientific, specific knowledge in Neurosciences development of skills		
PREREQUISITE COURSES	Successful attendance of the course Animal Physiology is recommended		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek. Instructions and presentations will be given in English in case foreign students attend the course		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.upatras.gr/courses/BIO260/		

2. LEARNING OUTCOMES

Learning outcomes
At the end of the course, the student will be able to: 1. Understand brain and behavior relationship 2. Understand the role of the brain in perception, and higher cognition 3. Identify the neural circuits that control specific behaviors 4. Understand how emotions arise out of the brain activity 5. Understand neural plasticity mechanisms
At the end of the course, the student will have developed the following skills/competences. 1. Critical scientific understanding the interaction of brain structure, function and plasticity. 2. Knowledge of brain organization and specificity of neural networks responsible for behavior and intelligent processes. 3. Understanding the mechanisms underlying the physiology and pathophysiology of cognitive and emotional functions.
General Competences
Development of creative thinking, understanding of scientific reasoning, critical reading of bibliography and learning new knowledge. Skills of group work.

3. SYLLABUS

Neurobiological basis of behavior, perception and cognition Cellular and biochemical specificity of neural circuits - From nerve cells to cognition Representation of cognitive functions and personal space. Experience-based internal body representation - Learning and memory Cellular mechanisms of learning and memory. Neuronal changes associated with learning. Experience-based modification of somatotopic map - Cerebral cortex and cognition. Frontal, parietal and temporal association areas are involved in motor planning, higher sensory functions and emotional behavior - Sex and the Brain Gonadal hormones and sexually differentiated brain. Masculinization of the brain. Brain influences on sex-dependent behaviors - Emotional states. Relationship of emotional and cognitive states. Cortical and sub-cortical representation of emotions.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Lectures, working groups case-based learning.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Power point, multimedia, e-class platform	
TEACHING METHODS	Activity	Semester workload
	Lectures	20
	Group work, presentations	15
	Reading bibliography	20
	Studying-exams	20
	Course total	75
STUDENT PERFORMANCE EVALUATION	Language Greek (or English in case of foreign students) Written exams at the end of semester (80%), Group presentation (20%) Passing grade: 5	

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

1. Essentials of Neural Sciences and Behavior, Kandel et al., Edts Appleton and Lange
2. Brain and Behaviour, Kolb, Whishaw, Edts Paschalides
3. Review scientific papers in related topics of Neurosciences
4. Biological Psychology, James W. Kalat, Odysseus Publishing Company Ltd.

Related academic journals: