

COURSE OUTLINE

"Cognitive Neuroscience in Education" (PSYED502)

(1) GENERAL

SCHOOL	SCHOOL OF SOCIAL & HUMANITIES (LIMASSOL UNIVERSITY) & SCHOOL OF HEALTH AND WELFARE SCIENCES (WEST ATTICA UNIVERSITY)		
SECTION	DEPARTMENT OF EDUCATIONAL SCIENCES & DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	MA		
COURSE CODE	PSYED502	SEMESTER OF STUDY	Γ'
COURSE TITLE	Cognitive Neuroscience in Education		
INDEPENDENT TEACHING ACTIVITIES <i>where credit is awarded for discrete parts of the course e.g. lectures, laboratory exercises, etc. If credit is awarded for the whole course, indicate the weekly teaching hours and the total number of credits</i>		WEEKLY TEACHING HOURS	CREDIT UNITS
LECTURES AND LABORATORY EXERCISES		3	10
<i>Add rows if necessary. The teaching organisation and the teaching methods used are described in detail in (d).</i>			
TYPE OF <i>general background, special background, specialization general knowledge, skills development</i>	General		
PREREQUISITE COURSES:	-		
LANGUAGE OF TEACHING AND EXAMINATION:	GREEK		
THE COURSE IS OFFERED TO STUDENTS	NO		
ELECTRONIC COURSE PAGE (URL)	https://moodle.uoi.ac.cy/login/index.php		

(2) LEARNING OUTCOMES

Learning Outcomes <i>The learning outcomes of the course are described as the specific knowledge, skills and competences of an appropriate level that students will acquire after successful completion of the course.</i> <i>Consult Annex A</i> <ul style="list-style-type: none"> • Description of the Level of Learning Outcomes for each cycle of study according to the Qualifications Framework of the European Higher Education Area • Descriptive Indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B • Learning Outcomes Writing Guide
<p>This course covers the exciting meeting of cognitive neuroscience and educational psychology. By exploring the biological foundations of learning, memory, and brain development, students are expected to gain a deeper understanding of how to optimize educational practices for students of all ages. The course aims to equip psychologists, educators, and education professionals with the principles of cognitive neuroscience and to</p>

facilitate learning processes through exploration of how the brain develops and functions. The course will discuss the effectiveness of educational practices in light of research evidence of brain function and cultivate the ability to develop strategies to promote optimal learning and cognitive development in diverse age groups. Through an integrated approach, students will gain valuable insights into the complex functions of learning in the brain, enabling them to create a more effective, inclusive, and interactive environment for students of all ages. Specifically, students after successful completion of the course will have acquired basic and sufficient knowledge about

- exploring brain imaging techniques used in research and using findings from these techniques to improve educational approaches.
- analysing differences in brain structure and function at different age stages.
- understanding the concept of brain neuroplasticity and its impact on learning and development.
- a description of the structure and function of neurons, neurotransmitters and neuroplasticity and their role in learning and development.
- understanding how sleep, memory and emotions affect learning and cognitive development.
- evaluating existing educational programmes and their adaptability to different stages of brain development
- the design of appropriate educational practices for different age groups (childhood, adolescence, late adolescence) based on the principles of Cognitive Neuroscience
- exploring the international literature on the application of Cognitive Neuroscience in educational psychology.

General skills

Taking into account the general competences that the graduate should have acquired (as listed in the Diploma Supplement and listed below), which one(s) does the course aim at?

Search, analysis and synthesis of data and information, using the necessary technologies
Adapting to new situations
Decision-making
Autonomous work
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Generating new research ideas

Project planning and management
Respect for diversity and
Respect for the natural environment
Demonstrate social, professional and ethical responsibility and sensitivity to gender issues
Exercise of criticism and self-criticism
Promoting free, creative and inductive thinking
.....
Other...
.....

The course aims to:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adapting to new situations
- Autonomous work
- Teamwork
- Working in an interdisciplinary environment

(3) COURSE CONTENT

LECTURES - UNITS:

1. Introduction to cognitive neuroscience in educational psychology.

This week focuses on the concepts of cognitive neuroscience and educational psychology. Students will gain a deep understanding of these aspects, the ways in which these concepts relate to each other, and the potential implications for research and practice

2. Imaging techniques in neuroscience.

This week focuses on imaging techniques. Students will gain a deep understanding of these techniques by cultivating skills in understanding the difference between the techniques presented.

3. Brain development during fetal age.

This week focuses on embryogenesis and all the changes that occur during this phase. Students will gain a deep understanding of the factors that take part in embryogenesis and how they can have a long-term impact on brain development during embryogenesis

4. Neurons, Neurotransmitters and Neuroplasticity of the Brain.

This week focuses on the main pillars of the nervous system and neuroplasticity. Students will gain a deep understanding of these topics, cultivating skills based on the question of how knowledge, about neuroplasticity, can have practical applications in educational psychology.

5. Introduction to brain structure.

This week focuses on the basic pillars of brain structure. Students will gain a deep understanding of these topics, cultivating skills in analyzing the function of the brain's major cortices and both hemispheres while applying current findings to practice.

6. Intelligence and Neuroplasticity.

This week focuses on the relationship between intelligence and neuroplasticity. Students will gain a deep understanding of these concepts and discuss around how fixed and developmental mindsets can affect learning and teaching.

7. Sleep, memory and learning.

This week focuses on sleep, memory and the factors that affect sleep.

8. Emotions and learning.

This week focuses on the key pillars of emotions and learning. Students will gain a deep understanding of these topics by analyzing how stress can affect memory consolidation while students will discuss educational practices to ensure a positive learning environment to promote learning well-being and improve learning outcomes

9. Brain, Arts and Emotional Control.

This week focuses on understanding how the arts relate to the regulation of emotions

10. Exercise, neuroplasticity and learning.

This week focuses on the relationship between exercise, neuroplasticity and learning from the perspective of students, parents and teachers

11. Development of educational practices in childhood.

This week focuses on understanding the basic changes that occur in the brain during childhood.

12. Developing educational practices for adolescence and late adolescence.

This week focuses on ways in which a teacher could create a developmentally appropriate learning environment for adolescence and late adolescence.

(4) TEACHING and LEARNING METHODS - EVALUATION

METHOD OF DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Distance	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>Use of ICT in Teaching, Laboratory Training, Communication with students</i>	ICT and their use in education are the subject of the course and are therefore used extensively in Teaching, Laboratory Training, Communication with students.	
ORGANISATION OF TEACHING <i>The way and methods of teaching are described in detail.</i> <i>Lectures, Seminars, Laboratory Exercise, Field Exercise, Study & Analysis of Literature, Tutoring, Practical (Placement), Clinical Exercise, Artistic Workshop, Interactive teaching, Educational visits, Study visits, Project work, Writing work / assignments, Artistic creation, etc.</i> <i>The student's hours of study for each learning activity and the hours of unguided study according to ECTS principles are indicated.</i>	Activity	Semester workload
	Lectures	39
	Laboratory exercises	13
	Interactive Teaching	13
	Study & Literature Analysis	26
	Study preparation	26
	Job Writing	36
	Independent Study	47
	Total	200
STUDENT ASSESSMENT <i>Description of the evaluation process</i> <i>Language of Evaluation, Evaluation Methods, Formative or Inferential, Multiple Choice Test, Multiple Choice Test, Short Answer Questions, Test Development Questions, Problem Solving, Written Work, Report, Oral Examination, Oral Examination, Public Presentation, Laboratory Work, Clinical Examination of a Patient, Artistic Interpretation, Other</i> <i>Explicitly identified assessment criteria are stated and if and where they are accessible to students.</i>	<p><i>Weekly interactive activities (20% in total): On a weekly basis, students will have the opportunity to interact with the teacher, other students and/or other relevant stakeholders to complete certain activities. These activities are an integral part of the course and help the student understand and assimilate each week's material. The instructor will select 10 interactive activities prior to the start of the course that will count towards the final course grade, each worth 2% of the grade. The remaining interactive activities will be available for students to complete (but will not contribute to their final grade) to facilitate self-assessment and to aid in-depth learning.</i></p> <p><i>Individual and/or collaborative work (30%): the instructor will assign the students an individual and/or collaborative project and will be evaluated according to the rubric of the project.</i></p> <p><i>Final examination (50%): the final examination will assess the students' understanding of the learning objectives set for the course and their ability to apply their knowledge to real-life scenarios in the field of Special Education and New Technologies.</i></p>	

(5) RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

- Crowder, R. G. (2014). principles of learning and memory: classic edition. psychology press
- Gray, P., & Bjorklund, D. (2018) *Psychology* (8th ed.) New York: Worth Publishers.
- Lyman, L. (2016). *brain science for principals: what school leaders need to know*. maryland: rowman & littlefield.
- Stillman C.M., Cohen, J., Lehman, M.E., & Erickson, K.I. (2016). *mediators of physical activity on neurocognitive function: a review at multiple levels of analysis*. *frontiers in human neuroscience* 10:626. doi 10.3389/fnhum.2016.00626. doi 10.3389/fnhum.2016.00626.

Wilcox, G., MacMaster, F. P., & Makarenko, E. (2022). cognitive neuroscience foundations for school psychologists: brain-behavior relationships in the classroom. Routledge

- Related scientific journals:

International Journal of Psychology

The Journal of Neuroscience

Psychological Science in the Public Interest

Journal of Cognitive Psychology

International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)

Journal of Educational Psychology

Psychology: Journal of the Hellenic Psychological Society