University of Gdańsk

Subject card

Subject name and code	Onto- and phylogenesis of nervous system, PG_00203445		
Field of study	Medical Biology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	academic	Assessment form	exam
Conducting unit	Laboratory of Neurophysiology and Neurochemistry -> Department of Animal and Human Physiology -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Witold Żakowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	4.0	16.0	50

Subject objectives

1. Students with familarize the most important questions and mechanisms related to the ontogeny and phylogeny of the nervous system in animals.
2. Students will learn about the process of development of the nervous system in humans, in the pre- and postnatal period, as well as diseases/disorders related to this process.
3. Students will learn about the structure of the nervous system (including selected sense organs) in various systematic groups of invertebrates and vertebrates.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDL3_W06] at an advanced level: describes, explains and compares systemic control mechanisms in animal and human organisms (including onto- and phylogenetic points of view) and the neurobiological and genetic basis of different disorders	describes and explains the basic stages and mechanisms of the development of the human nervous system in the embryonic and postnatal period, as well as diseases associated with disorders of this development	[SW4] test/exam - oral or written
[BIOLMEDL3_W04] has an advanced knowledge and understanding of the characteristics, systematics and evolution of selected groups of organisms including molecular basis and describes the basic concepts and mechanisms of evolution	presents the characteristics of the nervous system in individual groups of organisms and describes the basic mechanisms of the evolution of the nervous system	[SW4] test/exam - oral or written
[BIOLMEDL3_K01] understands the need for lifelong learning and to update his/her knowledge of medical biology and related disciplines	understands the need for lifelong learning and updating knowledge about the evolution and ontogeny of the nervous system	[SK8] observation of student's independent or team work
[BIOLMEDL3_U15] learns independently, in a focused manner	learns independently, in a directed way	[SU8] observation of student's independent or team work
[BIOLMEDL3_U05] synthesises data from different sources and draws appropriate conclusions from them	synthesizes data from various sources and draws appropriate conclusions on this basis	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[BIOLMEDL3_U06] reads with understanding scientific texts in Polish and simple texts in English in the field of medical biology; independently searches and uses available sources of information, including electronic sources	reads with understanding scientific texts in Polish and simple texts in English in the field of evolution and ontogeny of the nervous system; independently searches for and uses available sources of information, including electronic sources	[SU2] presentation/project/paper/ report [SU8] observation of student's independent or team work
[BIOLMEDL3_U09] has the ability to give oral presentations in Polish or English on specific issues in medical biology	has the ability to deliver oral presentations in Polish on specific issues related to the evolution and ontogeny of the nervous system	[SU2] presentation/project/paper/ report

Subject contents

1. Characteristics of the onto- and phylogeny of nervous tissue and the nervous system.
2. Basic stages and processes of the nervous system development in the embryonic and postnatal period.
3. Evolution of the nervous system of animals. Review of the nervous systems of selected taxonomic groups of invertebrates and vertebrates.

Prerequisites and co-requisites

Basic knowledge of zoology, animal anatomy, cell biology and mechanisms of evolution.

Introductory classes/lectures: Neurophysiology, Basics of neuroanatomy

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	51.0%	100.0%

Recommended reading

Basic literature	Kandel E. R., Schwartz J. H., Jessell T. M., Siegelbaum S. A., Hudspeth A. J., 2012. Principles of Neural Science. McGraw-Hill Medical Sanes D., Reh T., Harris W., 2011. Development of the Nervous System. Academic Press Kaas J., 2016. Evolution of Nervous Systems. Academic Press Watanabe S., Hofman M. A., Shimizu T., 2017. Evolution of the Brain, Cognition, and Emotion in Vertebrates. Springer
Supplementary literature	Felten D. L., Shetty A. N., 2012. Atlas neuroanatomii i neurofizjologii Nettera. Elsevier Urban & Partner Nolte J., 2011. Mózg człowieka. Anatomia czynnościowa mózgowia. Elsevier Urban & Partner Jura Cz., 2007. Bezkręgowce. Podstawy morfologii funkcjonalnej, systematyki i filogenezy. Wydawnictwo Naukowe PWN Szarski H., 1987. Anatomia porównawcza kręgowców. Wydawnictwo Naukowe PWN
eResources addresses	

Example issues/ example questions/ tasks being completed

1. Subsequent stages of development of the nervous system.
2. Developmental diseases of the nervous system.
3. Features of the nervous system that determine the course of cognitive processes in selected groups of animals.
4. Evolutionary trends in the nervous system in various developmental lines.

Work placement

Not applicable

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