University of Gdańsk

Subject card

Subject name and code	Neural regulation of motor functions, PG_00207343		
Field of study	Biology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Master'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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Neurobiology -> Department of Animal and Human Physiology -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Beata Grembecka	
	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

The purpose of the subject is to understand the mechanisms of motor function regulation at various levels of the nervous system organization and experimental models of motor disorders used in rodent studies. Acquisition of skills to independently deepen and present knowledge about neuronal mechanisms of motor function regulation and experimental models of motor disorders used in rodent studies it is proposed

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMU2_W05] has an in-depth knowledge and understanding of the dynamic development of the biological sciences and is well versed in new research trends and disciplines	During the preparation for classes, the student searches and analyzes the latest scientific articles	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOLMU2_W04] has in-depth knowledge of the chosen specialization in the biological sciences	The student acquires expert knowledge in a selected thematic area and is able to present it in written or oral form	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOLMU2_U07] is able to critically compare biological information from various sources and draw justified conclusions on this basis	To address the problem, the student identifies relevant articles and demonstrates the ability to draw appropriate conclusions from them	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
[BIOLMU2_U02] is able to proficiently use the scientific literature of the biological speciality studied	During the preparation for classes, the student searches and analyzes the latest scientific articles	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
[BIOLMU2_K07] is ready to systematically update biological knowledge and information on its practical applications	To complete the assigned task, the student consults current scientific articles that provide information on the practical implementation	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report
[BIOLMU2_K05] is ready to use recognized sources of scientific and popular information in the field of biological sciences in order to deepen his/her knowledge	To address the problem, the student independently conducts a literature search in scientific databases and selects articles that are relevant to the task	[SK1] oral statement/conversation/ discussion

Subject contents

Movement as a fundamental form of behavior in humans and animals. Categories of motor behaviors occurring in humans and animals. Levels of functional organization of movement. Organization of motor centers of the spinal cord. The level of the brainstem and midbrain. Functional organization of the basal nuclei. Control of automatic and voluntary movements. Correction of motor functions at the level of the cerebellum. Somatotopy in the motor structures of the cerebral cortex. Neurotransmitter and neuropeptide systems involved in the regulation of motor functions. Neurophysiological properties of motor neurons and mirror neurons. Neuronal basis of motor function control disorders: plegia, dyskinesia, dystonia, amyotrophic lateral sclerosis, Huntingtons chorea, Parkinsons disease, cerebellar ataxia, speech disorders. Experimental models of motor disorders in rodents. Methods of behavioral assessment of motor skills in rodents. Review of the latest research using experimental models of motor disorders.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	51.0%	40.0%
attendance at conservatories	51.0%	20.0%
Active participation in conservatories	51.0%	40.0%

Recommended reading

Basic literature	Handbook of Basal Ganglia Structure and Function, Heinz Steiner, Kuei Tseng, Academic Press, 2016; Mózg człowieka. Anatomia czynnościowa mózgowia, John Nolte, red. wyd. pol. Janusz Moryś, Elsevier Urban & Wrocław 2011, Neuroanatomia kliniczna, Paul A. Young, red. wyd. pol. Janusz Moryś, Elsevier Urban & Wrocław 2016, Biologiczne mechanizmy zachowania się ludzi i zwierząt Bogdan Sadowski, PWN, Warszawa 2007 Current scientific articles recommended by the lecturer.
Supplementary literature	Scientific articles recommended by the lecturer.
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement	Not applicable

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