University of Gdańsk

Subject card

Subject name and code	Central Nervous System Plasticity - selected issues, PG_00146641		
Field of study	Biology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	postgraduate studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Neurobiologii -> Katedra Fizjologii Zwierząt i Człowieka -> Faculty of Biology		
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	15.0	0.0	0.0	0.0	0.0	15

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	15	2.0	8.0	25

Subject objectives

The purpose of the subject is to demonstrate the role of plastic processes in human health and disease.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMU2_W01] the graduate knows and understands natural phenomena and processes at different levels of complexity	The student acquires knowledge about neuroplastic processes at various levels of complexity	[SW4] test/exam - oral or written [SW3] text preparation/written work
[BIOLMU2_K07] the graduate is ready to systematically update biological knowledge and information on its practical applications	The student utilizes the latest scientific research findings	[SK3] text preparation/written work [SK4] test/exam - oral or written
[BIOLMU2_U03] the graduate can critically analyse and select biological information, especially from electronic sources	The student is able to critically search for and analyze the latest research results and present them in written form.	[SU3] text preparation/written work
[BIOLMU2_W04] the graduate has an in-depth knowledge of the chosen specialisation in the biological sciences	The student acquires expert knowledge in a selected thematic area and is able to present it in written form	[SW4] test/exam - oral or written [SW3] text preparation/written work

Subject contents

Types of brain plasticity: developmental, compensatory, and memory plasticity. The significance of plastic processes at various stages of brain development. Brain structures involved in plastic processes - the role of the prefrontal cortex and hippocampus. Basics of learning and memory. Phenomena of habituation and sensitization as the basis for plastic changes. Classification of types of memory based on its duration and the subject of memory, and methods of memory assessment. Cellular and molecular bases of memory. The importance of sleep phases in brain plasticity processes and the consequences of their deficiency. Long-term strengthening and weakening of synaptic connections as the basis for modifying intercellular connections, the role of theta rhythm. The formation of memory traces and their storage. Classification of memory disorders. Repair of damage in the central and peripheral nervous system and its effectiveness.

Prerequisites and co-requisites

Basic knowledge of human anatomy and physiology, especiallyy the general structure of the nervous system are required

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>passing test</td><td>51.0%</td><td>50.0%</td></tr>
<tr><td>essay type written work</td><td>51.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Kossut M. Neuroplastyczność. 2018. Medyk.

Kossut M. (red.) 1994. Mechanizmy plastyczności mózgu. Wydawnictwo Naukowe PWN, Warszawa.

Górska T., Grabowska A., Zagrodzka J. (red.) 2013. Mózg a zachowanie. Wydawnictwo Naukowe PWN, Warszawa.</td></tr>
<tr><td>Supplementary literature</td><td>Quartarone, A., Ghilardi, M. F., & Boller, F. (Eds.). (2022). Neuroplasticity: From Bench to Bedside.

Current scientific articles recommended by the lecturer</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.