University of Gdańsk

Subject card

Subject name and code	Electrical brain activity, PG_00203474		
Field of study	Medical 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 Neurophysiology and Neurochemistry -> Department of Animal and Human Physiology -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Jolanta Orzeł-Gryglewska	
	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	33.0	50

Subject objectives

1. Understanding the neurophysiological basis of the processes of electrical activity of the brain.

2. Knowledge of EEG signal recording and analysis techniques and their use in scientific research and medical diagnostics.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDMU2_K01] is ready to critically evaluate himself, the teams in which he works and the content he receives	the student is ready to critically evaluate his/her work	[SK2] presentation/project/paper/ report
[BIOLMEDMU2_K02] is ready to recognize the importance of knowledge in solving cognitive and practical problems and to seek expert advice when having difficulty solving a problem on his own	the student recognizes the importance of knowledge in solving problems and seeking expert opinions in the event of difficulties in solving them	[SK2] presentation/project/paper/ report
[BIOLMEDMU2_K07] is able to form opinions on various aspects of professional practice and is also able to foster entrepreneurship and innovation in their professional work	the student is ready to formulate opinions on aspects of professional activity related to the electroencephalography method and data obtained using it	[SK2] presentation/project/paper/ report
[BIOLMEDMU2_U06] knows and applies English-language specialized vocabulary (level B2+) of biological and medical sciences in daily professional/scientific activities	the student knows and uses English-language specialist vocabulary in the field of electroencephalography	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[BIOLMEDMU2_W02] is familiar with current issues in medical biology and related disciplines	the student is familiar with currently discussed problems concerning the electrical activity of the brain	[SW4] test/exam - oral or written
[BIOLMEDMU2_W01] has an in-depth knowledge of scientific fields and disciplines relevant to medical biology and the studied specialty and knows their main development trends	the student has in-depth knowledge of electroencephalography and knows the main development trends in research using this method	[SW4] test/exam - oral or written
[BIOLMEDMU2_U01] is able to use, fluently yet critically, the academic literature and databases required for work in the field of medical biology and related disciplines, and to prepare and present academic papers in the field of medical biology and related sciences	the student is able to use the scientific literature and databases necessary for electroencephalography activities fluently but critically	[SU2] presentation/project/paper/ report
[BIOLMEDMU2_W03] has an in-depth understanding of the structure and functions of the human body, the biological causes of disorders, pathological changes and social dysfunctions, and the methods used to assess them using modern and current biochemical, molecular, parasitological or neurobiological techniques	the student knows the structure and functions of the human brain, the biological causes of neurological disorders and pathological changes, and the methods of their assessment using EEG	[SW4] test/exam - oral or written
[BIOLMEDMU2_U08] can independently plan and implement his own lifelong learning and guide others in doing so	the student is able to independently plan and implement his/her own learning	[SU4] test/exam - oral or written
[BIOLMEDMU2_U05] has the ability to speak in Polish or a foreign language at B2+ level and to discuss topics relating to their chosen specialism, as well as possessing the tools to engage in academic debate and the ability to adapt technical language to the appropriate audience	the student has the ability to give oral presentations and discuss topics related to the electrical activity of the brain	[SU2] presentation/project/paper/ report

Subject contents

Neurophysiological basis of electrical activity of the brain. Methods of recording brain activity based on EEG and MEG. Technical aspects of recording electrical brain activity in humans and various animal species. Basic methods of EEG signal analysis. The use of EEG techniques in the medical diagnosis of selected CNS disorders and lesions. Modern examples of applications of EEG techniques - neurofeedback, brain-computer interfaces, sleep studies.

Prerequisites and co-requisites

Basic knowledge of neuroanatomy, neurophysiology and human physiology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation	51.0%	20.0%
passing test	51.0%	80.0%

Recommended reading	Basic literature	J. Majkowski (red.): Elektroencefalografia Kliniczna, PZWL. Warszawa 1979. II wydanie 1989. Rowan J., Tolunsky E. 2004. Podstawy EEG z miniatlasem. Wydawnictwo Medyczne Urban & Partner, Wrocław. Current scientific publications in Polish and English, indicated by the lecturer.
	Supplementary literature	P. Durka (red.) Elektryczny ślad myśli. Praca zbiorowa, Wydawnictwo Uniwersytetu Warszawskiego. Konturek S. 2007. Rytmika funkcji fizjologicznych. Fizjologia człowieka. Elsevier Urban Partner.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Methods of mounting EEG electrodes Characteristics of cerebral rhythms Polysomnographic image of sleep EEG signal in epileptic states	
Work placement	Not applicable	

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