COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Neurophysiology	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: prof. Aidas Alaburda **Other(s):**	Vilnius University, Life sciences center, Deartment of Neurobiology and Biophysics

Study cycle	Type of the course unit (module)
Full-time studies (2nd stage)	Compulsory

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Lectures, seminars	I semester	Lithuanian/English

Requirements for students	
Prerequisites: none	**Additional requirements (if any):**

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	133	64	69

Purpose of the course unit (module): programme competences to be developed		
• Ability to understand the structure and functions of the nervous system at various levels of organization. • Ability to learn and to teach, to increase knowledge, to search for new or missing information in various databases.		
Learning outcomes of the course unit (module)	**Teaching and learning methods**	**Assessment methods**
• will be able to describe the structure and function of the neuron • will be able to describe how the resting membrane potential is formed ad how action potential is generated • will be able to describe the structure and functioning of ion channels • will be able to describe signal processing in the neuron • will be able to describe the structure of synapses and synaptic transmission • will be able to describe the principles of movement control in animals. • will be able to describe how the reflex movements are organized.	Lectures, reading of textbooks, practical work	Exam
Will be able to describe the main advances in neurophysiology during the last decade	Lectures, reading of textbooks and research papers, consultations,	Discussions during seminars, exam.
Will be able to find relevant original scientific publications, to point out the aim of study,	Search for information, reading of research papers,	Oral presentation

methods and the main findings and prepare oral presentation	consultation, preparation and oral presentation	

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work	**Contact hours**	**Self-study hours**	**Assignments**
1. Introduction	2						**2**		
2. Neurons and neuron networks	2		2				**4**	**4**	
3. Cytology of the neuron	4		2				**6**	**4**	
4. Synthesis and transport of neural protein	2		2				**4**	**4**	
5. Ion channels	2		2				**4**	**4**	
6. Membrane potential	2		2				**4**	**4**	
7. Passive properties of neuron	2		2				**4**	**4**	
8. Action potential generation	2		2				**4**	**4**	
9. Communication of neurons	4		2				**6**	**4**	
10. Neuro-muscular juction	2		2				**4**	**4**	
11. Synaptic integration	2		2				**4**	**4**	
12. Locomotion	2		2				**4**	**4**	
13. Spinal cord reflexes	2		2				**4**	**4**	
14. Control of locomotion	2		2				**4**	**4**	
15. Oral presentation on course related topic			6				**6**	**17**	
...									
Total	**32**		**32**				**64**	**69**	

Assessment strategy	Weight,%	Deadline	Assessment criteria
Oral presentation on course related topic	20	semester	Evaluation (max. 2): Presentation of context and problem (max. 0.5) Methods, findings, conclusion (max. 1) Fluency of preparation, presentation of material (max. 0.5) Oral presentation is compulsory
Exam	80	session	Written/oral exam (max. 8). There are two groups of questions. Student gets one question from each group, each question is evaluated separately (max. 4 each)

Author	Year of publication	Title	Issue of a periodical or volume of a publication	Publishing place and house or web link
Compulsary reading				
John Byrne, John H. Byrne, James L. Roberts	2009	From Molecules to Networks, Second Edition: An Introduction to Cellular and Molecular Neuroscience		Academic Press

Kandel E.R., Schwartz J.H., Jessell T.M, Siegelbaum S.A, Hudspeth, A.J.	2013	Principles of Neural Science		McGraw-Hill Publishing Co
Optional reading				
James Kew, Ceri Davies	2009	Ion Channels: From Structure to Function		Oxford University Press
		Original papers on course related topics		