

DESCRIPTION OF THE COURSE OF STUDY

Course code	0912-7LEK-C11-MP	
Name of the course in	Polish	Molekularne podstawy działania narządów zmysłu
	English	Molecular basis of sensory organs action

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	Medicine
1.2. Mode of study	Full-time
1.3. Level of study	Uniform Master's studies
1.4. Profile of study*	General academic
1.5. Specialization*	Lack
1.6. Unit running the course of study	The Faculty of Mathematics and Sciences
1.7. Person/s preparing the course description	Michał Arabski Ph.D., Assoc. Prof.
1.8. Person responsible for the course of study	Michał Arabski Ph.D., Assoc. Prof.
1.9. Contact	arabski@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Affiliation with the module	Selective courses
2.2. Language of instruction	English
2.3. Semesters in which the course of study is offered	3 rd semester
2.4. Prerequisites*	Basics of cell biology, genetics, biophysics

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lecture: 15 h	
3.2. Place of classes	The Faculty of Mathematics and Sciences	
3.3. Form of assessment	Course credit	
3.4. Teaching methods	Lecture	
3.5. Bibliography	Required reading	Glaser Roland Biophysics 2013, Springer Andrew W. Wood Physiology, biophysics and biomedical engineering. 2012 Taylor & Francis Group
	Further reading	Review articles published in PubMed and indicated by the teacher

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED TEACHING OUTCOMES

<p>4.1. Course objectives (lecture)</p> <p>C1. The physico-chemical basis of substances transport through cell membrane C2. Receptors conjugated with protein G and it role in signalling C3. The molecular basis of visual processes, hearing, taste and touch. C4. Neurons, synapses, action potentials and neurotransmission.</p>
<p>4.2. Detailed syllabus (lecture)</p> <p>Interfacial phenomena and membranes. Self-assembly and molecular structures of membranes. Mechanical properties of biological membranes. Electrical doubly-layers and electrokinetic phenomena. The electrostatic structure of membrane. The types of membrane transport: simple diffusion, osmosis, facilitated diffusion, active transport, endocytosis and exocytosis: movement of large particles. Ion channels versus ion pumps. The cell biology of ion pumps: sorting and regulation. Receptors conjugated with protein G and it role in signalling. The molecular basis of human vision: from the cornea to photoreceptors, the role of rhodopsin, transducin and receptors conjugated with protein G. Molecular biology of hearing and age-related hearing loss. Cellular basis of taste reception. The biological basis of touch under normal and pathophysiological conditions. Cellular and molecular mechanisms of pain.</p>

Code	A student, who passed the course	Relation to teaching outcomes
within the scope of KNOWLEDGE:		
W01	known the physico-chemical and molecular basis of visual processes, hearing, taste and touch.	B.W7
W02	is able to characterise action potentials and neurotransmission.	B.W21
W03	is able to describe a transport of chemical substances through membrane and basic of cell signalling.	B.W24
within the scope of ABILITIES:		
U01	can correlate changes in genes to sensors functions.	B.U6
U02	can predict the effects of modification and blocking of ion channels.	B.U7

4.4. Methods of assessment of the intended teaching outcomes

Teaching outcomes (code)	Method of assessment (+/-)																				
	Exam oral/written*			Test*			Project*			Effort in class*			Self-study*			Group work*			Others*		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...
W01	X																				
W02	X																				
W03	X																				
U01	X																				
U02	X																				

4.5. Criteria of assessment of the intended teaching outcomes

Form of classes	Grade	Criterion of assessment
lecture (L)	3.0	Obtaining 61-68% of the total number of points from the test
	3.5	obtaining 69-76% of the total number of points from the test
	4.0	obtaining 77-84% of the total number of points from the test
	4.5	obtaining 85-92% of the total number of points from the test
	5.0	obtaining at least 93%-100% of the total number of points from the test

- Thresholds are valid from 2018/ 2019 academic year

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload
	Full-time studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>	15
<i>Participation in lectures*</i>	14
<i>Preparation in the exam/final test*</i>	1
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>	10
<i>Preparation for the lecture*</i>	3
<i>Preparation for the exam/test*</i>	7
TOTAL NUMBER OF HOURS	25
ECTS credits for the course of study	1

Accepted for execution (date and signatures of the teachers running the course in the given academic year)

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