COURSE DESCRIPTION

University: Comenius University Bratislava	
Faculty: Faculty of Pharmacy	
Course ID: FaF.KFChL/02-Mgr/20	**Course title:** Biophysics
Educational activities: **Type of activities:** practicals / lecture / seminar **Number of hours:** **per week:** 0 / 1 / 2 **per level/semester:** 0 / 14 / 28 **Form of the course:** on-site learning	
Number of credits: 3	
Recommended semester: 3.	
Educational level: I.II.	
Prerequisites:	
Recommended prerequisites: General biology, Organic chemistry, Physics, Physical chemistry, Mathematics	
Course requirements: Written essay on the selected theme from literature, seminar presentation of the theme and its defense (max. 40 points). Active discussion at seminars, oral examination from lecture topics (max. 20 points). A total of at least 55 points must be obtained to obtain an A rating, at least 51 points to obtain a B rating, a minimum of 47 points for a C rating, a minimum of 42 points for a D rating and a minimum of 37 points for an E rating. Scale of assessment (preliminary/final): Seminar work and exam interview: a maximum of 60 points Scale of assessment (preliminary/final): 40/60	
Learning outcomes: The aim of the subject is to provide pharmacists with knowledge of physical processes that take place on the level of tissues, cells and molecules at physiological and pathological conditions. The importance of pharmaceutical view is emphasized in each of the studied problems. Students will be able to understand basic topics of molecular biophysics, to study selected themes from literature, to elaborate a written work about it and to present a lecture.	
Class syllabus: Selected lectures from molecular biophysics will be delivered either by experts from the Faculty or invited from other institutes: Introduction to Biophysics. Membrane biophysics, lipid bilayers, lipid rafts. Polymorphic behavior of lipids. Lipids as drug delivery systems in various applications. Biological membrane and anesthesia, solitons. Membrane channels – general introduction, specification, methods of study. Methods of isolation and detection of voltage dependent ion channels. Biophysics and pharmacology of voltage dependent channels. Hereditary diseases caused by mutation of membrane's channels. Dendrimers in drug delivery. Computational drug design. The lectured topics are discussed in seminars. The students discuss their own selected scientific problem and related literature for the essay and its presentation.	
Recommended literature: Uhríková, D. a kol.: Biofyzika – Vybrané kapitoly. Bratislava: UK, 2015. 239 s.	

Holan, J. a kol.: Biofyzika pre lekárov. Martin: Osveta, 1982. 741 s.
Prosser, V. a kol.: Experimentální metody biofyziky. Praha: Academia, 1989. 716 s.
Staničová, J.: Biofyzika. Košice: Príroda, 1990. 231 s.
Hlinková, E.: Biofyzika. Bratislava: UK, 1991. 192 s.
Ottová-Leitmannová, A.: Základy biofyziky. Bratislava: Alfa, 1993. 384 s.
Chorvát D.: Biofyzika. Bratislava: UK, 1998. 200 s.
Dunca, J., Hanzelík, F., Hlaváčová, Z., Hlozák, K.: Biofyzika. Nitra: SPU, 1999. 222 s.
Kodíček, M., Karpenko, V.: Biofysikální chemie. Praha: Academia, 2000. 337 s.
Ďoubal, S., Horáčková, I.: Biofyzika pro farmaceuty. Praha: Karolinum, 2000
Hrazdira, I., Mornstein, V., Škorpíková, J.: Základy biofyziky. Brno: Neptun, 2006. 312 s.
Kukurová, E., Kráľová, E.: Lekárska fyzika a biofyzika. Bratislava: UK, 2006. 263 s.
Šajter, V., Turecký, L., Kadlečík, R. Boruta, P.: Biofyzika, biochémia a rádiológia. Martin: Osveta, 2006. 271 s.
Ďoubal, S.: Vybrané kapitoly z biofyziky. Hradec Králové: FaF UK, 2006.
Jancura, D., Fabriciová, G.: Molekulová biofyzika. Košice: PriF UPJŠ, 2009. 236 s.
Lacinová, Ľ., Uhríková, D.: Biofyzika napäťovo závislých iónových kanálov. Bratislava: UK, 2010. 62 s.
Rosina, J., Vránová, J., Kolářová, H., Stanek, J.: Biofyzika. Praha: Grada, 2013. 224 s.
Kol. autorov: Funkcie biologických membrán v bunkách živočíchov, Bratislava, 2006, skriptá k druhému bloku prednášok projektu ESF "Biomembrány"
Kol. autorov: Biofyzikálne experimentálne metódy, Bratislava, 2008, skriptá k druhému bloku prednášok projektu ESF "Biomembrány"

Languages necessary to complete the course:
Slovak

Notes:
The number of enrolled students for the subject is ranged between 5 – 30 (min – max).

Past grade distribution
Total number of evaluated students: 53

A	ABS	B	C	D	E	FX
54,72	0,0	20,75	11,32	11,32	1,89	0,0

Lecturers: prof. RNDr. Daniela Uhríková, CSc., Mgr. Mária Klacsová, PhD.

Last change: 29.03.2022

Approved by: prof. RNDr. Daniela Uhríková, CSc.