Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Izbrana poglavja iz biofizike**
Course title:	**Selected topics in biophysics**

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
FIZIKA		1. ali 2.	**1., 2. ali 3.**
PHYSICS		1. or 2.	**1., 2. or 3.**

Vrsta predmeta / Course type	Izbirni za modula Biofizika 3 in Fizika 1, 2, 3
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Mentorstvo Mentorship	Samost. delo Individ. work	ECTS
7	**3**				**290**	**10**

Nosilec predmeta / Lecturer:	**Aleš Fajmut**
Jeziki / Languages: Predavanja / Lectures:	slovenski/Slovenian
Vaje / Tutorial:	/

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Ni posebnih zahtev.	No special prerequisites.

Vsebina:	**Content (Syllabus outline):**
Študenti se udeležijo seminarskih predavanj in kolokvijev gostujočih znanstvenikov raziskovalcev, ki jih organizirata Slovensko biofizikalno združenje in Oddelek za fiziko FNM UM, poletnih šol, delavnic ter drugih simpozijev s področja biofizike. Študenti se	Students attend seminar lectures and colloquia of visiting researchers that are organised by the Slovenian Biophysical Society and the Department of Physics FNM UM, summer schools, workshops, and other symposia from the field of Biophysics. Students actively attend

aktivno udeležijo ene konference, delavnice ali poletne šole, ki jo potrdi Oddelek za fiziko FNM UM.	one of the summer schools, conferences or workshops, which are approved by the Department of Physics FNM UM.

Temeljni literatura in viri / Readings:

1) G. Pifat-Mrzljak (ed.), Supramolecular structure and function 7, Springer, 2001.
2) G. Pifat-Mrzljak (ed.), Supramolecular structure and function 8, Springer, 2004.
3) G. Pifat-Mrzljak (ed.), Supramolecular structure and function 9, Springer, 2007.

Cilji in kompetence:	**Objectives and competences:**
• Razumeti osnovne ideje na širokem področju biofizike ter povezave z drugimi področji • Pridobiti dobro razgledanost nad aktualnimi tematikami sodobne biofizike	• Understanding the basic ideas in the broad domain of biophysics and the links to other fields • Gaining good overview on the topical themes of modern biophysics

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: • Poglobljeno razumevanje idej, metod in rezultatov sodobne biofizike Prenesljive/ključne spretnosti in drugi atributi: • sposobnost predstavitve pridobljenih raziskovalnih izsledkov s področja biofizike v obliki javnih predstavitev na znanstvenih srečanjih • poglobljeno razumevanje teoretskih in metodoloških konceptov z različnih področij moderne biofizike • mednarodna komunikativnost v vrhunskem znanstvenem in strokovnem okolju	Knowledge and understanding: • Deeper understanding of ideas, methods and results of modern biophysics Transferable/Key Skills and other attributes: • Capability of public presentation of research results from the field of biophysics to scientific community at the meetings • Deeper understanding of theoretical and methodological concepts from different areas of modern biophysics • Capability of communication in the top-level scientific community

Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja, seminar	Lectures, seminar

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Seminarska naloga • Ustna predstavitev naloge	**50%** **50%**	• Seminar work • Oral presentation of the seminar work

Reference nosilca / Lecturer's references:

1. DOBOVIŠEK, Andrej, FAJMUT, Aleš, BRUMEN, Milan. Strategy for NSAID administration to aspirin-intolerant asthmatics in combination with PGE [sub] 2 analogue: a theoretical approach. *Medical & biological engineering & computing*, ISSN 0140-0118. [Print ed.], 2012, vol. 50, no. 1, str. 33-42, doi: 10.1007/s11517-011-0844-x. [COBISS.SI-ID 18845192]

2. DOBOVIŠEK, Andrej, FAJMUT, Aleš, BRUMEN, Milan. Role of expression of prostaglandin synthases 1 and 2 and leukotriene C [sub] 4 synthase in aspirin-intolerant asthma: a theoretical study. *Journal of pharmacokinetics and pharmacodynamics*, ISSN 1567-567X, 2011, vol. 38, no. 2, str. 261-278, doi: 10.1007/s10928-011-9192-6. [COBISS.SI-ID 18203144]

3. FAJMUT, Aleš, BRUMEN, Milan. MLC-kinase/phosphatase control of Ca[sup]2+ signal transduction in airway smooth muscles. *Journal of theoretical biology*, ISSN 0022-5193, 2008, vol. 252, no. 3, str. 474-481. http://dx.doi.org/10.1016/j.jtbi.2007.10.005, doi: 10.1016/j.jtbi.2007.10.005. [COBISS.SI-ID 15856392]

4. BRUMEN, Milan, FAJMUT, Aleš, DOBOVIŠEK, Andrej, ROUX, Etienne. Mathematical modelling of Ca[sup]2+ oscillations in airway smooth muscle cells. *Journal of biological physics*, ISSN 0092-0606, 2005, 31, str. 515-524. [COBISS.SI-ID 14363656]

5. FAJMUT, Aleš, DOBOVIŠEK, Andrej, BRUMEN, Milan. Mathematical modeling of the relation between myosin phosphorylation and stress development in smooth muscles. *Journal of chemical information and modeling*, ISSN 1549-9596. [Print ed.], 2005, [Vol.] 45, str. 1610-1615. [COBISS.SI-ID 14353672]