Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Fiziologija živali**
Course title:	**Animal Physiology**

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	**/**	**5.**	**9.**
Five-year master's degree program Subject Teacher	**/**		

Vrsta predmeta / Course type	Obvezni/obligatory
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Seminarske vaje Tutorial	Lab. Vaje Lab. Work	Druge oblike študija	Samost. delo Individ. work	ECTS
30			**30**		**120**	**6**

Nosilec predmeta / Lecturer:	Jan Podlesnik

Jeziki / Languages:	**Predavanja / Lectures:**	slovenski / slovene
	Vaje / Tutorial:	slovenski / slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Poznavanje osnov zoologije.	Knowledge of fundamentals of zoology.

Vsebina:	**Contents (Syllabus outline):**
Zunanje in notranje okolje. Energetika celice. Energetika organizma. Temperatura in termoregulacija. Fiziologija membran: od zgradbe membrane do živčne integracije. Senzorična fiziologija: zaznavanje okolja. Hormoni in endokrini sistem. Celično gibanje, mišice in gibanje živali. Živčevje in vedenje. Kri in krvožilje. Izmenjava plinov – dihanje. Ionsko in osmotsko ravnotežje. Prehrana in prebava.	External and internal environments. Cellular energetics. Animal energetics. Temperature and thermoregulation. Membrane physiology: from membrane structure to neural integration. Sensory physiology: sensing the environment. Hormones and endocrine system. Cell movement, muscles and animal movement. Nervous system and behaviour. Blood and circulation. Gas exchange – respiration. Ionic and osmotic balance. Feeding and digestion.

Temeljni študijski viri / Textbooks:

Temeljna literatura / Basic:
Hill, R.W., G.A. Wyse, M. Anderson, 2016: Animal Physiology 4th Edition. Oxford University Press, Oxford.

Priporočena literatura / Recommended:
Moyes, C.D., P.M. Schulte, 2015: Principles of Animal Physiology. 3rd Edition. Pearson, Toronto.
Schmidt-Nielsen, K., 2010: Animal physiology: adaptation and environment. Cambridge University Press. Cambridge.
Sherwood, L., H. Klandorf, P. Yancey, 2012: Animal Physiology: From Genes to Organisms 2nd Edition. Cengage Learning, Brooks and Cole, Belmont, USA.
Ashcroft F. 2011: Življenje v skrajnostih: umetnost preživetja. Zavod Republike Slovenije za šolstvo, Ljubljana.

Cilji:

. Podati povezavo med živalskim organizmom in njegovim zunanjim in notranjim okoljem
. Pojasniti vlogo membran pri temeljnih fizioloških procesih.
. Pojasniti integracijsko vlogo senzoričnega sistema, živčevja in hormonalnega sistema.
. Predstaviti temeljne fiziološke procese v živalskem organizmu.

Objectives and competences:

. To give the connection between animal organism and its internal and external environment.
. To explain the role of membranes in general physiological processes.
. To explain integrative role of sensory system, hormones and nervous system.
. To present fundamental physiological processes in animal organisms.

Predvideni študijski rezultati:

Znanje in razumevanje:
. Povezava med živalskim organizmom in njegovim zunanjim in notranjim okoljem
. Vlogo membran pri temeljnih fizioloških procesih.
. Vloga integracijskih sistemov - senzoričnega sistema, živčevja in hormonalnega sistema.
. Osnovni procesi metabolizma od celičnega nivoja do organizma.

Prenesljive/ključne spretnosti in drugi atributi:
. Sposobnost načrtovati in izvesti preproste eksperimente za testiranje odzivov živali na kontrolirane spremembe v njenem okolju.
. Sposobnost ovrednotiti rezultate fiziološkega poskusa.

Intended learning outcomes:

Knowledge and understanding:
. Connection between animal organism and its internal and external environment.
. The role of membranes in general physiological processes.
. Integrative role of sensory system, hormones and nervous system.
. Metabolic processes from cell to organism.

Transferable/Key Skills and other attributes:
. Ability to arrange simple experiments testing responses of an animal to controlled changes of its environment.
. Ability to evaluate results of an experiment in animal physiology.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

- Lectures
- Laboratory exercises - individual experimental practice

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Kolokviji iz vaj.		Partial exams of experimental practice.
Pisni izpit.		Written exam.
Opravljeni kolokviji in poročilo sta pogoj za pristop k izpitu.	50% 50%	Partial exams and laboratory report are prerequisites for taking the exam.

Reference nosilca / Lecturer's references:

1.

MARTINEZ, Vanessa, SILLAM-DUSSES, David, DEVETAK, Dušan, LORENT, Vincent, PODLESNIK, Jan. Antlion larvae localize long distant preys by a mechanism based on time difference. Journal of Comparative Physiology A. Maj 2023 (in press).

DEVETAK, Dušan, PODLESNIK, Jan, SCHARF, Inon, KLENOVŠEK, Tina. Fine sand particles enable antlions to build pitfall traps with advanced three-dimensional geometry. Journal of Experimental Biology. Aug. 2020, vol. 223, no. 15, str. 1-10. ISSN 0022-0949. DOI: 10.1242/jeb.224626. [COBISS.SI-ID 28827907]

PODLESNIK, Jan, JAKŠIĆ, Predrag N., NAHIRNIĆ, Ana, JANŽEKOVIČ, Franc, KLENOVŠEK, Tina, KLOKOČOVNIK, Vesna, DEVETAK, Dušan, et al. Fauna of the brown lacewings of Serbia (Insecta: Neuroptera: Hemerobiidae). Acta entomologica slovenica. jun. 2019, vol. 27, št. 1, str. 17-29, zvd. ISSN 1318-1998. http://www.dlib.si/details/URN:NBN:SI:doc-EFR3WIIU. [COBISS.SI-ID 2027509]

PODLESNIK, Jan, KLOKOČOVNIK, Vesna, LORENT, Vincent, DEVETAK, Dušan. Prey detection in antlions : propagation of vibrational signals deep into the sand. Physiological entomology. 2019, vol. 44, iss. 3/4, str. 215-221. ISSN 0307-6962. DOI: 10.1111/phen.12295. [COBISS.SI-ID 24646664], [JCR, SNIP]

DEVETAK, Dušan, PODLESNIK, Jan, KLOKOČOVNIK, Vesna. Predator-prey interactions in antlions: transmission of vibrational signals deep into the sand. Acta entomologica slovenica. dec. 2018, vol. 26, št. 2, str. 121-130, ilustr. ISSN 1318-1998. [COBISS.SI-ID 1957365]