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:**
Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno. Pozitivna ocena laboratorijskega dela je pogoj za pristop k pisnemu izpitu.	Each of the mentioned commitments must be assessed with a passing grade. Passing grade of the laboratory work is required for taking the written exam.

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.	External and internal environments. Cellular energetics. Animal energetics. Temperature and thermoregulation. Membrane physiology: from membrane structure to neural integration. Sensory physiology: sensing the environment.

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.	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:

Randall, D. J., Burggren, W. W., & French, K. (2002). Eckert animal physiology: mechanisms and adaptations (5th ed., str. XVII, 736, 56). W. H. Freeman and Company.

Gogala, M., Ramovš, M., Stušek, P., & Valentinčič, T. (1995). Primerjalna anatomija in fiziologija (8. izd., str. 135). DZS.

Priporočena literatura / Recommended:

Hill, R. W., Wyse, G. A., & Anderson, M. (2018). Animal physiology (4th ed., international, str. VII, 828 , pril. (loč. pag.)). Oxford University Press.

Moyes, C. D., & Schulte, P. M. (2014). Principles of animal physiology (2nd ed., Pearson new int. ed., str. II, 758). Pearson.

Schmidt-Nielsen, K. (2010). Animal physiology: adaptation and environment (11th printing, str. VIII, 612). Cambridge University Press.

Cilji:	**Objectives and competences:**
- 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.	- 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:	**Intended learning outcomes:**
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	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

eksperimente za testiranje odzivov živali na kontrolirane spremembe v njenem okolju. - Sposobnost ovrednotiti rezultate fiziološkega poskusa.	responses of an animal to controlled changes of its environment. - Ability to evaluate results of an experiment in animal physiology.

Metode poučevanja in učenja:	Learning and teaching methods:
Predavanja Laboratorijske vaje – individualno eksperimentalno delo	Lectures Laboratory exercises - individual experimental practice

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Pisni izpit. Laboratorijsko delo	50% 50%	Written exam. Laboratory work

Opombe:
Pisni izpit se lahko nadomesti s kolokviji v enakem deležu 50%.

Comments:
Written exam can be replaced by written midterm examination in the weight of 50%.

Reference nosilca / Lecturer's references:

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]

KLENOVŠEK, Tina, DEVETAK, Dušan, PODLESNIK, Jan. Analiza geometrije lijakastih pasti v pesku. V: POTOČNIK, Božidar (ur.). ROSUS 2023 : računalniška obdelava slik in njena uporaba v Sloveniji 2023 : zbornik 17. strokovne konference : [23. marec 2023, Maribor, Slovenija]. 1. izd. Maribor: Univerza v Mariboru, Univerzitetna založba, 2023. Str. 69-75, ilustr. ISBN 978-961-286-721-8. https://press.um.si/index.php/ump/catalog/book/769, Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: 10.18690/um.feri.4.2023.7, DOI: 20.500.12556/DKUM-88107.

DEVETAK, Dušan, NAHIRNIĆ, Ana, JAKŠIĆ, Predrag, KLOKOČOVNIK, Vesna, KLENOVŠEK, Tina, BADANO, Davide, PODLESNIK, Jan. Review of Antlions (Insecta: Neuroptera: Myrmeleontidae) in North Macedonia. *Acta zoologica bulgarica*. 2023, vol. 75, no. 2, str. 169-180, ilustr. ISSN 0324-0770. https://www.acta-zoologica-bulgarica.eu/2023/002661.pdf

MARTINEZ, Vanessa, SILLAM-DUSSÈS, David, DEVETAK, Dušan, LORENT, Vincent, PODLESNIK, Jan. Antlion larvae localize long distant preys by a mechanism based on time diference. Journal of comparative physiology. A, Sensory, neural, and behavioral physiology. 2024, vol. 210, iss. 1, str. 35-45, ilustr. ISSN 0340-7594. Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: 10.1007/s00359-023-01641-x, DOI: 20.500.12556/DKUM-88348.

PODLESNIK, Jan, STRITIH PELJHAN, Nataša, DEVETAK, Dušan. Sensitivity of the subgenual organ in adult Euroleon nostras (Geoffroy in Fourcroy, 1785) antlions (Neuroptera: Myrmeleontidae) to vibrational stimuli = Občutljivost subgenualnega organa odraslih volkcev Euroleon nostras

(Geoffroy in Fourcroy, 1785) (Neuroptera: Myrmeleontidae) na vibracijske dražljaje = Sensibilità dell'organo subgenuale negli adulti di Euroleon nostras (Geoffroy in Fourcroy, 1785) (Neuroptera: Myrmeleontidae) agli stimoli vibrazionali. V: JUGOVIC, Jure (ur.), et al. *Seventh Slovenian Entomological Symposium with international attendance : book of abstracts : Izola, 31 January and 1 February 2025 = Sedmi slovenski entomološki simpozij z mednarodno udeležbo : knjiga povzetkov : Izola, 31. januar in 1. februar 2025 = Settimo simposio entomologico Sloveno con partecipazione internazionale : libro degli abstract : Isola, 31 gennaio e 1 febbraio 2025*. Electronic ed. Koper; = Capodistria: University of Primorska Press: = Založba Univerze na Primorskem: = Edizioni Università del Litorale, 2025. Str. 40-41. ISBN 978-961-293-428-6. https://www.hippocampus.si/ISBN/978-961-293-428-6.pdf.