Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Ekofiziologija živali**
Course title:	Animal Ecophysiology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biologija in ekologija z naravovastvom, 2. stopnja	/	2	3
Biology and Ecology with Nature Conservation, 2nd cycle	/	2	3

Vrsta predmeta / Course type Obvezni / Compulsory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individual work	ECTS
30	15		30	10	95	6

Nosilec predmeta / Lecturer: Jan Podlesnik

Jeziki / Languages:	
Predavanja / Lectures:	Slovenski / Slovenian
Vaje / Tutorial:	Slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Jih ni.	No prerequisites.

Vsebina:	**Content (Syllabus outline):**

• Notranje okolje: intracelularno in ekstracelularno okolje. Zunanje okolje: atmosfera, vodno in kopensko okolje. • Homeostaza in regulacijski mehanizmi: toleranca in rezistenca; aklimatizacija in aklimacija. • Energetika živali: sproščanje in pretvorbe energije, aerobna in anaerobna presnova. • Temperatura in termoregulacija. Hitrost reakcij. Temperaturno okolje. Izmenjava toplote. Ektotermi, endotermi. Biokemijske adaptacije na določene temperature. • Čutila in okolje. • Dihanje: dihanje vodnih in kopenskih organizmov. • Voda in telesne tekočine. Izločanje. • Prehrana in prebava. Vzorci prehranjevanja. Specializirani prebavni sistemi (celuloza, hitin, voski).	• Internal environment: intracellular and extracellular environment. External environment: atmosphere, aquatic and terrestrial environments. • Homeostasis and regulation: tolerance and resistance; acclimatization and acclimation. • Animal energetics: energy release and transformations; aerobic metabolism; anaerobic metabolism. • Temperature and thermoregulation. Reaction rates. Thermal environment. Heat exchange. Ectotherms, endotherms. Biochemical adaptations to specific temperatures. • Sensory receptors and environment. • Aquatic respiration; aerial respiration. • Water and body fluids. Excretion. • Nutrition and digestion. Feeding patterns. Specialized digestive systems (cellulose, chitin, wax).

Temeljni literatura in viri / Readings:

Temeljni viri / Basic:

Schmidt-Nielsen, K., 2010: Animal physiology: adaptation and environment. Cambridge University Press. Cambridge.

Willmer, Pat., Johnston, Ian A., Stone, G., 2009: Environmental physiology of animals. 2. Izdaja. Malden, MA : Blackwell Science.

Priporočeni viri / Recommended:

Ashcroft F. 2011: Življenje v skrajnostih: umetnost preživetja. Zavod Republike Slovenije za šolstvo, Ljubljana.

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

Moyes, C.D., P.M. Schulte, 2015: Principles of Animal Physiology. 3rd Edition. Pearson, Toronto.

Sherwood, L., H. Klandorf, P. Yancey, 2012: Animal Physiology: From Genes to Organisms 2nd Edition. Cengage Learning, Brooks and Cole, Belmont, USA.

Cilji in kompetence:	**Objectives and competences:**
• Obravnavati zveze živalski organizem – zunanje okolje – notranje okolje • Pojasniti vpliv dejavnikov okolja na temeljne fiziološke procese • Predstaviti temeljne fiziološke procese v živalskem organizmu • Sposobnost načrtovati in izvesti preproste eksperimente za testiranje odzivov živali na kontrolirane spremembe v njenem okolju. • Sposobnost ovrednotiti rezultate fiziološkega poskusa	• To discuss relations: animal organism – internal environment – external environment • To explain the influence of environmental factors on general physiological processes • To present fundamental physiological processes in animal organisms • 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

Predvideni študijski rezultati:	**Intended learning outcomes:**
Po uspešno opravljeni učni enoti naj bi bili študenti zmožni: - pojasniti vlogo biotskih in abiotskih dejavnikov na temeljne fiziološke procese; - načrtovati ter izvajati eksperiment in izsledke interpretirati; - obravnavati izbrane fiziološke procese kot adaptacije na ekstremna okolja.	By the end of this course students should be able to: - explain the influence of abiotic and biotic factors on general physiological processes; - design, conduct and report on experiments in animal physiology; - debate certain physiological processes in the context of adaptation to extreme environment.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Laboratorijske vaje – individualno eksperimentalno delo • Terensko delo	• Lectures • Laboratory exercises – individual experimental practice • Field work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt): Študent mora opraviti: • Seminarska naloga in poročilo vezano na laboratorijske in terenske vaje • Pisni izpit	40 60	Type (examination, oral, coursework, project): The following should be done: • Seminar essay and report on laboratory and field work • Written exam

Reference nosilca / Lecturer's references:

DEVETAK, Dušan, NAHIRNIĆ-BESHKOVA, Ana, JAKŠIĆ, Predrag, KLOKOČOVNIK, Vesna, KLENOVŠEK, Tina, BADANO, Davide, PODLESNIK, Jan. Review of Antlions (Insecta: Neuroptera: Myrmeleontidae) in North Macedonia. Acta Zoologica Bulgarica. 2023. https://www.acta-zoologica-bulgarica.eu/2023/002661.pdf

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]