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:

Jih ni.

Prerequisites:

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.

Priporočeni viri / Recommended:

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	• Lectures • Laboratory exercises – individual experimental practice

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt): Študent mora opraviti:		Type (examination, oral, coursework, project): The following should be done:
• Kolokvij iz vaj	30	• Partial exam of experimental practice
• Seminarska naloga	30	

• Pisni izpit	40	• Seminar essay • Written exam

Reference nosilca / Lecturer's references:

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]

PODLESNIK, Jan, MIHAJLOVIĆ, Ljubodrag, JURC, Maja. A two-year study of parasitoid entomofauna associated with spruce bark beetles (Coleoptera: Curculionidae) in the altimontane belt of Slovenia (Pohorje). *Phytoparasitica*. 2017, vol. 45, no. 2, str. 135-145. ISSN 0334-2123. DOI: 10.1007/s12600-017-0574-1. [COBISS.SI-ID 23042056], [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]

KLOKOČOVNIK, Vesna, PODLESNIK, Jan, DEVETAK, Dušan. Occurrence of the antlion tribe Acanthaclisini in the Balkan Peninsula : (Neuroptera, Myrmeleontidae). *Spixiana : Zeitschrift für Zoologie*. 2016, bd. 39, h. 1, str. 99-104, ilustr. ISSN 0341-8391. [COBISS.SI-ID 22594568]

PODLESNIK, Jan, KLOKOČOVNIK, Vesna, KLENOVŠEK, Tina, DEVETAK, Dušan. Distribution of Suarius nanus (McLachlan, 1893) (Neuroptera: Chrysopidae) on the Balkan Peninsula. *Acta zoologica bulgarica*, ISSN 0324-0770, 2016, vol. 68, no. 3, str. 339-342, ilustr. http://www.acta-zoologica-bulgarica.eu/downloads/acta-zoologica-bulgarica/2016/68-3-339-342.pdf