



Univerza v Mariboru



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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 naravovarstvom, 2. stopnja	/	2	3
Biology and Ecology with Nature Conservation, 2 nd Level	/	2	3

Vrsta predmeta / Course type Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

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

Nosilec predmeta / Lecturer: Dušan Devetak, Tone Novak

Jeziki / Languages:	Predavanja / Lectures:	Slovensko / Slovene
	Vaje / Tutorial:	Slovensko / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: **Prerequisites:**

Vsebina:

- 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).

Content (Syllabus outline):

- 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:

- Randall, D., W. Burggren, K. French, 2000: Eckert Animal Physiology. W. H. Freeman and Company, New York.
- Schmidt-Nielsen, K. 1997: Animal Physiology. Adaptation and Environment. 5th Edition. Cambridge Univ. Press, Cambridge.
- Withers, P. C., 2002: Comparative Animal Physiology. Saunders College Publishing, Philadelphia, New York.

Cilji in kompetence:

- 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

Objectives and competences:

- 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:**

Znanje in razumevanje:

- Razumevanje zvez živalski organizem – zunanje okolje – notranje okolje
- Osnovni procesi metabolizma od celičnega nivoja do organizma.

Knowledge and understanding:

- Understanding of relations: animal organism – internal environment – external environment
- Basic metabolic processes from cell to organismic level.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

- Lectures
- Laboratory excersises – individual experimental practice

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Laboratorijski dnevnik
- Kolokvij iz vaj
- Seminarska naloga
- Pisni izpit

Delež (v %) /

Weight (in %)

10
20
30
40

Assessment:

Type (examination, oral, coursework, project):

- Diary of experimental practice
- Partial exam of experimental practice
- Seminar essay
- Written exam

Reference nosilca / Lecturer's references:

LIPOVŠEK DELAKORDA, Saška, LETOFSKY-PAPST, Ilse, HOFER, Ferdinand, LEITINGER, Gerd, DEVETAK, Dušan. The evidence on the degradation processes in the midgut epithelial cells of the larval antlion *Euroleon nostras* (Geoffroy in Fourcroy, 1785) (Myrmeleontidae, Neuroptera). *Micron* (1993). [Print ed.], 2012, vol. 43, iss. 5, str. 651-665, ilustr., doi: [10.1016/j.micron.2011.11.012](https://doi.org/10.1016/j.micron.2011.11.012). [COBISS.SI-ID [18855176](https://www.cobiss.si/id/18855176)]

LIPOVŠEK DELAKORDA, Saška, LETOFSKY-PAPST, Ilse, HOFER, Ferdinand, PABST, Maria Anna, DEVETAK, Dušan. Application of analytical electron microscopic methods to investigate the function of spherites in the midgut of the larval antlion *Euroleon nostras* (Neuroptera: Myrmeleontidae). *Microsc. res. tech. (Print)*, 2012, vol. 75, iss. 4, str. 397-407, ilustr., doi: [10.1002/jemt.21069](https://doi.org/10.1002/jemt.21069). [COBISS.SI-ID [18638856](https://www.cobiss.si/id/18638856)]

NOVAK, Tone, KLOKOČOVNIK, Vesna, LIPOVŠEK DELAKORDA, Saška, DEVETAK, Dušan, JANŽEKVIČ, Franc. Preferences for different substrates in *Phalangium opilio* (Opiliones: Phalangiidae) in natural environment = Preference navadnega matije, *Phalangium opilio* (Opiliones: Phalangiidae) do različnih substratov v naravnem okolju. *Acta biol. slov.* [Tiskana izd.], 2009, vol. 52, št. 1, str. 29-35. [COBISS.SI-ID [26360793](https://www.cobiss.si/id/26360793)]

DEVETAK, Dušan. Wormlion *Vermileo vermileo* (L.) (Diptera: Vermileonidae) in Slovenia and Croatia = Vermileone, *Vermileo vermileo* (L.) (Diptera: vermilionidae), in Slovenia e Croazia. *Ann. Ser. hist. nat.*, 2008, letn. 18, št. 2, str. 283-286, ilustr. [COBISS.SI-ID [16594184](https://www.cobiss.si/id/16594184)]

