



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Fiziologija živali
<b>Course title:</b>	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:

Dušan Devetak

Jeziki /

Languages:

Predavanja /

Lectures:

slovenski / slovene

Vaje / Tutorial:

slovenski / slovene

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

Poznavanje osnov zoologije.

**Prerequisites:**

Knowledge of fundamentals of zoology.

**Vsebina:**

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.

**Contents (Syllabus outline):**

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:**

- Alcock, J., 2005: Animal behavior: an evolutionary approach. 8th ed. Freeman, Sunderland.
- Randall, D., W. Burggren, K. French, 2000: Eckert Animal Physiology. W.H. Freeman and Company, New York.
- Withers, P.C., 2002: Comparative Animal Physiology. Saunders College Publishing, Philadelphia, New York.

#### 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.

#### 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.

#### Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

#### Načini ocenjevanja:

- Kolokvij iz vaj.
- Pisni izpit.

#### 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.

#### 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.

#### Learning and teaching methods:

- Lectures
- Laboratory exercises - individual experimental practice

Delež (v %) /  
Weight (in %)

#### Assessment:

• Kolokvij iz vaj.	50%	Partial exam of experimental practice.
• Pisni izpit.	50%	Written exam.

#### Reference nosilca / Lecturer's references:

1. DEVETAK, Dušan, NOVAK, Tone, JANŽEKOVIČ, Franc. Effect of substrate density on behaviour of antlion larvae (Neuroptera: Myrmeleontidae). Acta oecologica. [Print ed.], 2012, vol. 43, str. 1-7. [COBISS.SI-ID19210248]
2. KLOKOČOVNIK, Vesna, DEVETAK, Dušan, ORLAČNIK, Marina. Behavioral plasticity and variation in pit construction of antlion larvae in substrates with different particle sizes. Ethology, Nov. 2012, vol. 118, iss. 11, str. 1102-1110, doi: 10.1111/eth.12012. [COBISS.SI-ID 19324936]
3. 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. [COBISS.SI-ID 18855176]
4. 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. [COBISS.SI-ID 18638856]

5. DEVETAK, Dušan, LIPOVŠEK DELAKORDA, Saška, PABST, Maria Anna. Larval morphology of the antlion *Neuroleon microstenus* (McLachlan, 1898) (Neuroptera, Myrmeleontidae), with notes on larval biology. *Zootaxa* (Print), 2010, 2428, str. 55-63, ilustr. <http://www.mapress.com/zootaxa/2010/f/zt02428p063.pdf>. [COBISS.SI-ID 17543944]