



Univerza v Mariboru



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Fakulteta za naravoslovje in  
matematiko

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	Ekofiziologija členonožcev
<b>Course title:</b>	<i>Ecophysiology of Arthropods</i>

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biologija in ekologija z naravovarstvom, 2. stopnja	/	1/2	Poletni/ Zimski
Biology and Ecology with Nature Conservation, 2 <sup>nd</sup> Level	/	1/2	Summer/ Winter

**Vrsta predmeta / Course type**

**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
15	15		15		135	6

**Nosilec predmeta / Lecturer:**

**Jeziki / Languages:**

<b>Predavanja / Lectures:</b>	Slovensko / Slovene
<b>Vaje / Tutorial:</b>	Slovensko / Slovene

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

Poznavanje biodiverzitete Slovenije.

Knowledge of biodiversity of Slovenia.

### Vsebina:

- Zaznavanje dražljajev v okolju. Svetloba, toplota, mehanski in kemijski dražljaji.
- Ekološki optimumi in preferendumi členonožcev.
- Substrat in medij.
- Ekologija prehrane in prebave členonožcev. Specialisti in generalisti. Prebava celuloze in hitina. Analiza vsebine prebavnega trakta.
- Ocenjevanje sekundarne bioprodukcije.
- Prezimovanje in presnova. Viri energije za metabolne procese pri členonožcih: glikogen in lipidi.

### Content (Syllabus outline):

- Sensory reception and the environment. Light, temperature, mechanical and chemical stimuli.
- Ecological optima and preferenda in arthropods.
- Substrate and medium.
- Ecology of nutrition and digestion. Specialists and generalists. Digestion of cellulose and chitin. Intestinal contents analysis.
- Estimation of the secondary production.
- Overwintering and metabolism. Energizing matter in arthropods: glycogen and lipids.

### Temeljni literatura in viri / Readings:

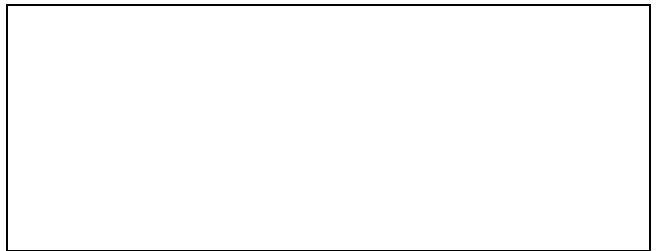
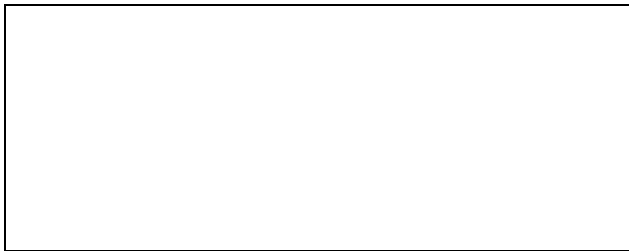
- Barth, F.G., 2002: A spider's world: senses and behavior. Springer, Berlin.
- Dusenbery D. B., 1995: Sensory ecology: How organisms acquire and respond to information. W. H. Freeman and Company, New York.
- Heinrich, B., 1981: Insect thermoregulation. John Wiley & Sons, New York.
- Huffaker C. B., R. L. Rabb, 1984: Ecological entomology. John Wiley & Sons, New York.
- Lehrer, M., 1997: Orientation and communication in arthropods. Birkhäuser, Basel.
- Pinto-da-Rocha, R.; G. Machado, G. Giribet, 2006: Harvestman: The Biology of Opiliones. Harvard University Press, Cambridge, MA.
- Southwood, T. R. F., 1992: Ecological methods. Chapman and Hall.
- Withers, P. C., 2002: Comparative Animal Physiology. Saunders College Publishing, Philadelphia, New York.

### Cilji in kompetence:

- Opravi raziskave na terenu in v laboratoriju ter povezati različne organizacijske nivoje, od molekularnega do ekosistemskega
- Podati povezavo med živalskim organizmom in njegovim zunanjim in notranjim okoljem
- Razumevanje različnih vedenjskih, fizioloških in biokemijskih strategij kot prilagoditev na določene biotske in abiotske dejavnike okolja
- Sposobnost opraviti terenske in laboratorijske ekofiziološke raziskave na različnih nivojih, od molekularnega do ekosistemskega
- Sposobnost ovrednotiti rezultate ekofizioloških poskusov s členonžci

### Objectives and competences:

- To conduct studies in the field and in laboratory, and to span different levels of organisation from the molecular to the ecosystemal one
- To give relations between animal organism and its internal and external environment
- To understand various behavioural, physiological and biochemical strategies of arthropods in interacting their biotic and abiotic environments
- Ability to conduct the in the field and laboratory ecophysiological studies at different levels, from the molecular to the ecosystemal
- Ability to evaluate results of ecophysiological experiments on arthropods

**Predvideni študijski rezultati:****Znanje in razumevanje:**

- Razumevanje vedenjskih, fizioloških in biokemijskih strategij, ki omogočajo uspešnost členonožcev v okolju
- Razumevanje funkcioniranja živalskega organizma v povezavi z njegovim zunanjim in notranjim okoljem

**Intended learning outcomes:****Knowledge and understanding:**

- Understanding of behavioural, physiological and biochemical strategies employed to achieve survival and success in environment
- Understanding of functioning of animal organism with regard to its internal and external environment.

**Metode poučevanja in učenja:**

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

**Learning and teaching methods:**

- Lectures
- Laboratory excersises – individual experimental practice

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

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

- Kolokvij iz vaj
- Seminarska naloga
- Pisni izpit

30  
30  
40

Type (examination, oral, coursework, project):

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

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

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-ID[19210248](#)]

LIPOVŠEK DELAKORDA, Saška, LETOFKY-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](#)]

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](#)]

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](#)]

NOVAK, Tone, PERC, Matjaž, LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIČ, Franc. Duality of terrestrial subterranean fauna. *Int. J. Speleol. (Ed. ital.)*, 2012, vol. 41, no. 2, str. 181-188, doi: [10.5038/1827-806X.41.2.5](https://doi.org/10.5038/1827-806X.41.2.5). [COBISS.SI-ID [19061512](#)]

SCHÖNHOFER, Axel L., NOVAK, Tone. Identity and identification of *Trogulus banaticus* (Opiliones: Trogulidae) - a neglected species in the Northern Balkans. *Arachnol. Mitt.*, 2011, hft. 42, str. 5-11, ilustr., doi: [10.5431/aramit4202](https://doi.org/10.5431/aramit4202). [COBISS.SI-ID [18859528](#)]

LIPOVŠEK DELAKORDA, Saška, NOVAK, Tone, JANŽEKOVIČ, Franc, PABST, Maria Anna. Role of the fat body in the cave crickets *Troglophilus cavicola* and *Troglophilus neglectus* (Rhaphidophoridae, Saltatoria) during overwintering. *Arthropod struct. develop.*, 2011, vol. 40, no. 1, str. 54-63, ilustr. [COBISS.SI-ID [18020104](#)]

ŠAJNA, Nina, KUŠAR, Primož, SLANA NOVAK, Ljuba, NOVAK, Tone. Benefits of low-intensive grazing: co-occurrence of umbelliferous plant (*Hladnikia pastinacifolia* Rchb.) and opilionid species (*Phalangium opilio* L.) in dry, calcareous grassland. *Pol. J. Ecol.*, 2011, vol. 59, issue 4, str. 777-786, ilustr. [COBISS.SI-ID [18921992](#)]