



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	<b>Izbrana poglavja iz ekofiziologije členonožcev</b>
<b>Course title:</b>	<b>Selected Topics in Ecophysiology of Arthropods</b>

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Doktorski študij Ekološke znanosti, 3. stopnja		1. ali 2.; 1st or 2nd	1. 2. ali 3. ; 1st, 2nd or 3rd
Doctoral Study Ecological Sciences, 3rd degree			

**Vrsta predmeta / Course type**

**Univerzitetna koda predmeta / University course code:**

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
5	5				140	5

**Nosilec predmeta / Lecturer:**

**Jeziki / Predavanja / Lectures:**   
**Languages: Vaje / Tutorial:**

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

Poznavanje ekofiziologije členonožcev na ravni univerzitetnega programa

**Prerequisites:**

Knowledge of ecophysiology of arthropods at graduate level

**Vsebina:**

Obravnavana so izbrana poglavja iz naslednjih sklopov.

- 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
- Ocenjevanje sekundarne bioprodukcije
- Prezimovanje in presnova. Viri energije za

**Content (Syllabus outline):**

Selected topics in the following chapters are discussed.

- 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
- Estimation of the secondary production
- Overwintering and metabolism. Energizing matter in arthropods: glycogen and lipids

metabolne procese pri členonožcih: glikogen in lipidi

#### 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., A. P. Gutierrez, 1998: Ecological entomology. Second edition. 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.
- Wajnberg, E., C. Bernstein, A. van Jacques, 2008. Behavioral ecology of insect parasitoids : from theoretical approaches to field applications. Carlton : Blackwell Publishing. Oxford.

#### Cilji in kompetence:

- Raziskave izbranih členonožcev na terenu in v laboratoriju ter povezati različne organizacijske nivoje, od molekularnega do ekosistemskega
- Razumevanje vedenjskih, fizioloških in biokemijskih strategij izbranih členonožcev kot prilagoditev na določene biotske in abiotske dejavnike okolja

#### Objectives and competences:

- Studies on selected arthropods in the field and in laboratory, and to span different levels of organisation from the molecular to the ecosystemal one
- To understand behavioural, physiological and biochemical strategies of selected arthropods in interacting their biotic and abiotic environments

#### Predvideni študijski rezultati:

Znanje in razumevanje:

- Podrobno razumevanje vedenjskih, fizioloških in biokemijskih strategij, ki omogočajo uspešnost izbranih členonožcev v okolju
- Podrobno razumevanje funkcioniranja izbranih členonožcev v zvezi z njegovim zunanjim in notranjim okoljem

#### Intended learning outcomes:

Knowledge and Understanding:

- Advanced understanding of behavioural, physiological and biochemical strategies of selected arthropods employed to achieve survival and success in environment
- Advanced understanding of functioning of selected arthropods with regard to their internal and external environment.

Prenesljive/ključne spretnosti in drugi atributi:

- Sposobnost opraviti vrhunske znanstvene terenske in laboratorijske ekofiziološke raziskave na različnih nivojih, od molekularnega do ekosistemskega
- Sposobnost vrhunsko ovrednotiti rezultate ekofizioloških poskusov s členonžci

Transferable/Key Skills and other attributes:

- Ability to conduct top-level scientific in the field and laboratory ecophysiological studies at different levels, from the molecular to the ecosystemal
- Top-level ability to evaluate results of ecophysiological experiments on arthropods

**Metode poučevanja in učenja:**

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

**Learning and teaching methods:**

- Lectures
- Laboratory exercises – individual experimental practice

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
<ul style="list-style-type: none"><li>• Seminarska naloga</li><li>• Pisni zpit</li></ul>	<p>50 %</p> <p>50 %</p>	<ul style="list-style-type: none"><li>• Seminar essay</li><li>• Written exam</li></ul>

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

1. NOVAK, Tone, ŠAJNA, Nina, ANTOLINC, Estera, LIPOVŠEK DELAKORDA, Saška, DEVETAK, Dušan, JANŽEKovič, Franc. Cold tolerance in terrestrial invertebrates inhabiting subterranean habitats. *International journal of speleology*, ISSN 0392-6672, 2014, vol. 43, no. 3, str. r39-r46. <http://dx.doi.org/10.5038/1827-806X.43.3.3>, doi: [10.5038/1827-806X.43.3.3](https://doi.org/10.5038/1827-806X.43.3.3). [COBISS.SI-ID [20595208](https://www.cobiss.si/id/20595208)], [JCR, SNIP, Scopus do 28. 7. 2014: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]
2. DEVETAK, Dušan. Substrate particle size-preference of wormlion *Vermileo vermileo* (Diptera: Vermileonidae) larvae and their interaction with antlions. *European Journal of Entomology*, ISSN 1210-5759, 2008, issue 4, vol. 105, str. 631-635, ilustr. [COBISS.SI-ID [16213768](https://www.cobiss.si/id/16213768)], [JCR, SNIP, WoS do 11. 8. 2014: št. citatov (TC): 8, čistih citatov (CI): 8, normirano št. čistih citatov (NC): 7, Scopus do 9. 6. 2014: št. citatov (TC): 8, čistih citatov (CI): 8, normirano št. čistih citatov (NC): 7]
3. DEVETAK, Dušan, ŠPERNJAK, Andreja, JANŽEKovič, Franc. Substrate particle size affects pit building decision and pit size in the antlion larvae *Euroleon nostras* (Neuroptera: Myrmeleontidae). *Physiological entomology*, ISSN 0307-6962, 2005, 30, 2, str. 158-163, ilustr. [COBISS.SI-ID [14077448](https://www.cobiss.si/id/14077448)], [JCR, SNIP, WoS do 8. 6. 2014: št. citatov (TC): 20, čistih citatov (CI): 15, normirano št. čistih citatov (NC): 15, Scopus do 5. 1. 2014: št. citatov (TC): 20, čistih citatov (CI): 15, normirano št. čistih citatov (NC): 15]