



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Izbrana poglavja iz biologije žuželk
<b>Course title:</b>	Selected Topics in Biology of Insects

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 členonožcev in biodiverzitete na ravni univerzitetnega programa

**Prerequisites:**

Knowledge of arthropods and biodiversity at graduate level

**Vsebina:**

Obravnavana so izbrana poglavja iz naslednjih sklopov.

- Koža. Členjenost telesa. Biokemija in presnova žuželk. Prehrana in prebava
- Vsebnost vode, osmoregulacija, izločanje
- Dihala. Hemolimfa in cirkulacija
- Živčevje. Senzorični receptorji
- Mišice in gibanje. Učenje in spomin
- Hormonalni sistem. Razmnoževanje in razvoj
- Socialne žuželke. Žuželke in rastline

**Content (Syllabus outline):**

Selected topics in the following chapters are discussed.

- Integument. Body segmentation. Biochemistry and metabolism. Nutrition and digestion
- Water balance, osmoregulation, excretion
- Respiratory system. Hemolymph and circulation
- Nervous system. Sensory receptors
- Muscles and locomotion. Learning and memory
- Endocrine system. Reproduction and development

- Entomofage žuželke. Bioluminiscenca
- Žuželke in mikroorganizmi
- Medicinska entomologija
- Biološka, kemijska in biotehniška kontrola škodljivcev. Regulacija gostote populacije
- Biogeografija
- Sistem žuželk
- Žuželke v Sloveniji

- Social insects. Insects and plant
- Entomophagous insects. Bioluminescence
- Insects and microorganisms
- Medical entomology
- Biological, chemical and biotechnical pest control
- Regulation of population density
- Biogeography
- Insect systematics
- Insects in Slovenia

### Temeljni literatura in viri / Readings:

- Borror, D. J., N.F. Johnson, 2005: An introduction to the study of insects. 7th Edition. Thompson Bookes/Cole. University of Minnesota.
- Chapman, R. F., 2012: The insects: structure and function. Harvard University Press; Cambridge, Mass.
- Dettner, K., W. Peters, (eds.), 2003: Lehrbuch der Entomologie. Spektrum, G. Fischer, Heidelberg.
- Dusenbery, D. B., 1995: Sensory ecology: How organisms acquire and respond to information. W. H. Freeman and Company, New York.
- Elzinga, R. J., 2003: Fundamentals of entomology. Prentice Hall, Upper Saddle River.
- Jurc, M., 2008: Gozdna zoologija. Univerza v Ljubljani, Biotehniška fakulteta, Oddelek za gozdarstvo in obnovljive gozdne vire.
- Resh, V. H., R. T. Cardé, 2003: Encyclopedia of insects. Academic Press – Elsevier, New York.

### Cilji in kompetence:

- Vrhunsko razumeti kompleksnost biologije žuželk
- Podrobno spoznati izbrane predstavnike žuželk
- Podrobno poznati in razumeti vlogo gospodarsko pomembnih žuželk
- Podrobno poznati značilne predstavnike slovenske entomofavne

### Objectives and competences:

- Top-level understanding complexity of insect biology
- Top-level knowledge of selected insects
- Advanced understanding role of the economically important insects
- Advanced knowledge of important representatives of Slovenian entomofauna

### Predvideni študijski rezultati:

#### Znanje in razumevanje:

- Vrhunsko razumevanje biotskih adaptacij, ki vodijo do uspeha žuželk v okolju
- Vrhunsko razumevanje kompleksnosti biologije žuželk
- Podrobno spoznati predstavnike izbranih redov žuželk
- Podrobno poznati in razumeti vlogo gospodarsko pomembnih žuželk

#### Prenesljive/ključne spretnosti in drugi atributi:

- Sposobnost načrtnega zbiranje žuželk na terenu in determinacijo v laboratoriju

### Intended learning outcomes:

#### Knowledge and Understanding:

- Top-level understanding of the biotic adaptations employed to achieve survival and success of insects in environment
- Top-level understanding complexity of insect biology
- Advanced knowledge of representatives of selected insect orders
- Advanced understanding role of the economically important insects

#### Transferable/Key Skills and other attributes:

- Ability to conduct planned collecting in the field and determination in laboratory

**Metode poučevanja in učenja:****Learning and teaching methods:**

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

- Lectures
- Laboratory excersises – individual experimental practice

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

- Seminaraska naloga
- Pisni izpit

50 %  
50 %

- Seminar essay
- Written exam

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

1. DEVETAK, Dušan, KLOKOČOVNIK, Vesna, RAUSCH, Hubert, JANŽEKovič, Franc. Fauna of the Neuroptera (Raphidioptera, Neuroptera) of the Protected area Jasen, Macedonia : a summer flash. *Turkish journal of zoology*, ISSN 1300-0179, 2014, str. 1-13, ilustr. <http://journals.tubitak.gov.tr/havuz/zoo-1305-43.pdf>, doi: [10.3906/zoo-1305-43](https://doi.org/10.3906/zoo-1305-43). [COBISS.SI-ID [20717576](https://www.cobiss.si/record/20717576)], [JCR, SNIP]
2. DEVETAK, Dušan, OMERZU, Manja, CLOPTON, Richard E. Notes on the gregarines (Protozoa: Apicomplexa: Eugregarinorida) of insects in Slovenia. *Annales, Series historia naturalis*, ISSN 1408-533X, 2013, letn. 23, št. 1, str. 73-89, ilustr. [COBISS.SI-ID [20087304](https://www.cobiss.si/record/20087304)]
3. DEVETAK, Dušan, PODLESNIK, Jan, KLOKOČOVNIK, Vesna, JANŽEKovič, Franc. Antlions (Insecta: Neuroptera: Myrmeleontidae) of Albania. *Turkish journal of zoology*, ISSN 1300-0179, 2013, vol. 37, iss. 3, str. 362-366, ilustr., doi: [10.3906/zoo-1209-23](https://doi.org/10.3906/zoo-1209-23). [COBISS.SI-ID [19864328](https://www.cobiss.si/record/19864328)], [JCR, SNIP, WoS do 16. 9. 2013: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0, Scopus do 10. 6. 2013: št. citatov (TC): 0, čistih citatov (CI): 0, normirano št. čistih citatov (NC): 0]
4. JONES, Joshua R., DEVETAK, Dušan. First record of Nevrothidae from Slovenia = Prva najdba družine Nevrothidae v Sloveniji. *Acta entomologica slovenica*, ISSN 1318-1998, dec. 2009, vol. 17, št/No. 2, str. 99-106, ilustr. [COBISS.SI-ID [766965](https://www.cobiss.si/record/766965)]
5. 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/record/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]