



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	<b>Entomologija</b>
<b>Course title:</b>	<b>Entomology</b>

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	/	2, 3	3 ali 4 ali 5 ali 6
Five-year master's degree program Subject Teacher	/	2, 3	3 ali 4 ali 5 ali 6

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30		15			135	6

Nosilec predmeta / Lecturer:

Jan Podlesnik

Jeziki /

Languages:

Predavanja /

Lectures:

slovenski / slovene

Vaje / Tutorial:

slovenski / slovene

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

Jih ni.

Prerequisites:

No prerequisites.

**Vsebina:**

Izbrana poglavja iz naslednjih vsebin:  
 Koža: epidermis, kutikula, barve (strukturne barve, pigmenti), kožne žleze.  
 Členjenost telesa: glava, thorax, abdomen.  
 Prehrana in prebava. Vsebnost vode, osmoregulacija, ionska regulacija in ekskrecija. Trahealni sistem in dihanje.  
 Hemolimfa in transport z njeno pomočjo.  
 Živčevje. Učenje in spomin. Senzorični receptorji. Premikanje in senzomotorična integracija. Endokrini sistem.  
 Razmnoževanje in razvoj (ontogeneza).  
 Socialne žuželke. Žuželke in rastline.  
 Entomofagne žuželke. Bioluminescenca.  
 Žuželke in mikroorganizmi. Medicinska entomologija. Pregled redov žuželk.

**Content (Syllabus outline):**

Selected topics:  
 Skin: epidermis, cuticle, pigmentation (coloration based on the structure; pigments), skin glands.  
 Segmentation: the head, thorax, abdomen.  
 Feeding and digestion. Water content, osmoregulation, excretion. Tracheal system and respiration. Hemolymph and transport.  
 Nervous system. Learning and memory.  
 Sensory receptors. Movement and sensomotory integration. Endocrine system.  
 Reproduction and development. Social insects.  
 Insects and plants. Entomophagous insects. Bioluminescence. Insects and microbes. Medical entomology. A review of insect orders.

**Temeljni literatura in viri / Readings:**

Temeljna literatura / Basic:

Gullan P.J., P.S. Cranston, 2015: The Insects: An Outline of Entomology 5th Edition. Wiley-Blackwell, West Sussex, UK.

Priporočena literatura / Recommended:

Chapman R.F., S. J. Simpson, A. E. Douglas, 2012: The insects. Structure and function. 4th Edition. Cambridge University Press, London.

Dettner K., W. Peters, 2010: Lehrbuch der Entomologie. Elsevier GmbH, München.

Resh, V. H., R. T. Cardé, 2009: Encyclopedia of insects 2nd Edition. Academic Press – Elsevier, New York.

Schowalter, T. D., 2016: Insect ecology. An ecosystem approach. 4th ed. Elsevier, Amsterdam.

Wermelinger, B., 2017: Insekten im Wald – Vielfalt, Funktionen und Bedeutung. Eidg. Forschungsanstalt WSL, Birmensdorf; Haupt, Bern.

**Cilji in kompetence:**

Predstaviti temelje telesne organizacije žuželk  
 Spoznati pomen žuželk v gospodarstvu in naravnih habitatih  
 Predstaviti in razumeti biodiverzitetu žuželk  
 Znati uporabljati ključne (determinacija)

**Objectives and competences:**

Present foundation of insect body organization  
 Present the role of insects in economy and natural habitats  
 Present and understand insect biodiversity  
 Practical skills in insect determination

**Predvideni študijski rezultati:**

Po uspešno opravljeni učni enoti naj bi bili študenti zmožni:

- pojasniti temeljne značilnosti telesne organizacije žuželk;
- razumeti in pojasniti kompleksno vlogo žuželk v ekosistemih;
- primerjati holometabolne in hemimetabolne žuželke in pojasniti prednosti teh dveh strategij;
- opredeliti značilnosti in določiti žuželke do glavnih redov.

**Intended learning outcomes:**

By the end of this course students should be able to:

- explain fundamentals of the insect 'Bauplan';
- understand and explain complex role of insects in ecosystems;
- compare holometabolous and hemimetabolous insects and explain advantages of the two strategies;
- identify insects to the order level and define taxonomic features of the orders.

**Metode poučevanja in učenja:**

Predavanja  
Seminar  
Laboratorijske vaje – individualno eksperimentalno delo  
Terensko delo

**Learning and teaching methods:**

Lectures  
Seminar  
Laboratory exercises – individual experimental practice  
Field work

Delež (v %) /

Weight (in %)

**Načini ocenjevanja:****Assessment:**

Kolokvij iz vaj	<b>50</b>	Partial exam of experimental practice
Pisni izpit	<b>50</b>	Written exam
Opravljen kolokvij je pogoj za pristop k izpitu.		Partial exam is a prerequisite for taking the exam.

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

PODLESNIK, Jan, KLOKOČOVNIK, Vesna, LORENT, Vincent, DEVETAK, Dušan. Prey detection in antlions : propagation of vibrational signals deep into the sand. *Physiological entomology*. 2019, vol. 44, iss. 3/4, str. 215-221. ISSN 0307-6962. DOI: [10.1111/phen.12295](https://doi.org/10.1111/phen.12295). [COBISS.SI-ID [24646664](https://www.cobiss.si/id/24646664)]  
financer: ARRS, Programi, P1-0403, SI, Računsko intenzivni kompleksni sistemi

PODLESNIK, Jan, MIHAJLOVIĆ, Ljubodrag, JURC, Maja. A two-year study of parasitoid entomofauna associated with spruce bark beetles (Coleoptera: Curculionidae) in the altimontane belt of Slovenia (Pohorje). *Phytoparasitica*. 2017, vol. 45, no. 2, str. 135-145. ISSN 0334-2123. DOI: [10.1007/s12600-017-0574-1](https://doi.org/10.1007/s12600-017-0574-1). [COBISS.SI-ID [23042056](https://www.cobiss.si/id/23042056)]

KLOKOČOVNIK, Vesna, PODLESNIK, Jan, DEVETAK, Dušan. Occurrence of the antlion tribe Acanthaclisini in the Balkan Peninsula : (Neuroptera, Myrmeleontidae). *Spixiana : Zeitschrift für Zoologie*. 2016, bd. 39, h. 1, str. 99-104, ilustr. ISSN 0341-8391. [COBISS.SI-ID [22594568](#)]

PODLESNIK, Jan, KLOKOČOVNIK, Vesna, KLENOVŠEK, Tina, DEVETAK, Dušan. Distribution of *Suarius nanus* (McLachlan, 1893) (Neuroptera: Chrysopidae) on the Balkan Peninsula. *Acta zoologica bulgarica*, ISSN 0324-0770, 2016, vol. 68, no. 3, str. 339-342, ilustr. <http://www.acta-zoologica-bulgarica.eu/downloads/acta-zoologica-bulgarica/2016/68-3-339-342.pdf>