



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Entomologija
Course title:	Entomology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Univerzitetni študijski program Ekologija z naravovarstvom, 1. stopnja		2. in 3.; 2nd and 3rd	3. ali 4. ali 5. ali 6. / 3rd or 4th or 5th or 6th
Undergraduate university programme Ecology with Nature Conservation, 1st 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
30			15		135	5

Nosilec predmeta / Lecturer:

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

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

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 sensomotor 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:

Borror D.J., Triplehorn C.A., Johnson N.F. (2005): An Introduction to the study of insects. Saunders, Philadelphia.
Brauns A. (1991): Taschenbuch der Waldinsekten. 4. Aufl., Gustav Fischer Verlag, Stuttgart.
Chapman R.F., S. J. Simpson, A. E. Douglas (2012): The insects. Structure and function. 4th Edition. Cambridge University Press, London.
Davies R.G. (2003): Outlines of entomology. 7th ed. Chapman and Hall, London, New York.
Dettner K., Peters W. (2010): Lehrbuch der Entomologie. Elsevier GmbH, München.
Huffaker C.B., Rabb R.L. (1984): Ecological entomology. John Wiley & Sons, New York.
Lehrer, M. (1997): Orientation and Communication in Arthropods. Birkhäuser, Basel.
Wichard W., Arens W., Eisenbeis G. (2003): Atlas zur Biologie der Wasserinsekten. Gustav Fischer Verlag, Stuttgart.

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:**Znanje in razumevanje:**

- Razumevanje kompleksnosti zgradbe telesa žuželk
- Vloga žuželk v naravnih ekosistemih in agroekosistemih
- Razumevanje pomena žuželk v medicinski entomologiji (vektorji bolezni)
- Interakcije rastline – škodljivci – predatorji
- Diverziteteta žuželk

Prenesljive/ključne spretnosti in drugi atributi:

- Sposobnost načrtovati in izvesti preproste eksperimente z žuželkami
- Determinacija – delo s ključi
- Disekcija telesa žuželk

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

- Understanding of complexity of insect body organization
- The role of insects in natural ecosystems and agroecosystems
- Understanding the role of insects as vectors of diseases (medical entomology)
- Interactions in the chain plants – pest insects – predators
- Insect diversity

Transferable/Key Skills and other attributes:

- Ability to arrange simple experiments on insects
- Determination – usage keys for determination
- Dissection of insect body

Metode poučevanja in učenja:

- Predavanja
- Seminar
- Laboratorijske vaje – individualno eksperimentalno delo
- Terensko delo

Learning and teaching methods:

- Lectures
- Seminar
- Laboratory excersises – individual experimental practice
- Field work

Načini ocenjevanja:

- Kolokvij iz vaj
- Pisni izpit

Opravljen kolokvij je pogoj za pristop k izpitu.

Delež (v %) /

Weight (in %)

50

50

Assessment:

- Partial exam of experimental practice
- Written exam

Partial exam is a prerequisite for taking the exam.

Reference nosilca / Lecturer's references:

DEVETAK, Dušan, KLOKOČOVNIK, Vesna, RAUSCH, Hubert, JANŽEKOVIČ, Franc. Fauna of the Neuropterida (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/id/20717576)]

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/id/19864328)]

DEVETAK, Dušan, KLOKOČOVNIK, Vesna, LIPOVŠEK DELAKORDA, Saška, BOCK, Elisabeth, LEITINGER, Gerd. Larval morphology of the antlion *Myrmecaelurus trigrammus* (Pallas, 1771) (Neuroptera, Myrmeleontidae), with notes on larval biology. *Zootaxa*, ISSN 1175-5326, 2013, vol. 3641, no. 4, str. 491-500, ilustr. <http://dx.doi.org/10.11646/zootaxa.3641.4.14>. [COBISS.SI-ID [19837192](https://www.cobiss.si/id/19837192)]

DEVETAK, Dušan, NOVAK, Tone, JANŽEKOVIČ, Franc. Effect of substrate density on behaviour of antlion larvae (Neuroptera: Myrmeleontidae). *Acta oecologica*, ISSN 1146-609X. [Print ed.], 2012, vol. 43, str. 1-7. [COBISS.SI-ID [19210248](https://www.cobiss.si/id/19210248)]

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*, ISSN 1175-5326, 2010, 2428, str. 55-63, ilustr. <http://www.mapress.com/zootaxa/2010/f/zt02428p063.pdf>. [COBISS.SI-ID [17543944](https://www.cobiss.si/id/17543944)]