



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
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	3, 4	5 ali 8
Five-year master's degree program Subject Teacher	/	3, 4	5 or 8

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 / Predavanja / Lectures: Slovenski / Slovenian
Languages: Vaje / Tutorial: Slovenski / Slovenian

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

Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno.

Pozitivna ocena iz laboratorijskega dela je pogoj za pristop k pisnemu izpitu.

Prerequisites:

Each of the mentioned commitments must be assessed with a passing grade.

Passing grade of the laboratory work is required for taking the written exam.

Vsebina:

Content (Syllabus outline):

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.

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:

Temeljna literatura / Basic:

Chapman, R. F. (2016). The insects: structure and function (5th ed., str. XXXI, 929). Cambridge University Press.

Gullan, P. J., & Cranston, P. S. (2014). The insects: an outline of entomology (5th ed., str. XXIV, 595). Wiley Blackwell.
 Jurc, M. (2011). Gozdna zoologija: [univerzitetni učbenik] (3. natis, str. XI, 348). Biotehniška fakulteta, Oddelek za gozdarstvo in obnovljive gozdne vire.
<https://repozitorij.uni-lj.si/IzpisGradiva.php?id=124306>

Priporočena literatura / Recommended:

Schowalter, T. D. (2022). Insect ecology: an ecosystem approach (5th ed., str. XII, 928). Academic Press; Elsevier.
 Triplehorn, C. A., & Johnson, N. F. (2005). Borror and DeLong's Introduction to the Study of Insects (7th ed., str. X, 864). Thomson Brooks/Cole.

Cilji in kompetence:

Predstaviti temelje telesne organizacije žuželk
 Spoznati pomen žuželk v gospodarstvu in naravnih habitatih
 Predstaviti in razumeti biodiverziteto 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
Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

Lectures

Laboratory exercises – individual experimental practice

Načini ocenjevanja:

Laboratorijsko delo Pisni izpit

Delež (v %) /

Weight (in %) **Assessment:**

40
60

Laboratory work Written exam

Reference nosilca / Lecturer's references:

MARTINEZ, Vanessa, SILLAM-DUSSÈS, David, DEVETAK, Dušan, LORENT, Vincent, PODLESNIK, Jan. Antlion larvae localize long distant preys by a mechanism based on time difference. *Journal of comparative physiology. A, Sensory, neural, and behavioral physiology*. 2024, vol. 210, iss. 1, str. 35-45, ilustr. ISSN 0340-7594. Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: 10.1007/s00359-023-01641-x, DOI: 20.500.12556/DKUM-88348.

DEVETAK, Dušan, NAHIRNIĆ, Ana, JAKŠIĆ, Predrag, KLOKOČOVNIK, Vesna, KLENOVŠEK, Tina, BADANO, Davide, PODLESNIK, Jan. Review of Antlions (Insecta: Neuroptera: Myrmeleontidae) in North Macedonia. *Acta zoologica bulgarica*. 2023, vol. 75, no. 2, str. 169-180, ilustr. ISSN 0324-0770. <https://www.acta-zoologica-bulgarica.eu/2023/002661.pdf>

DEVETAK, Dušan, POPOV, Alexi, RAUSCH, Hubert, KRPAČ, Vladimir, HRISTOVSKI, Slavčo, KLENOVŠEK, Tina, PODLESNIK, Jan, KLOKOČOVNIK, Vesna. The brown lacewing *Hemerobius schedli* Hölzel, 1970 in the Balkan Peninsula : (Neuroptera, Hemerobiidae). *Spixiana : Zeitschrift für Zoologie*. 2021, bd. 44, h. 1, str. 63-70, ilustr. ISSN 0341-8391. [COBISS.SI-ID 84543491], [JCR, SNIP]

PODLESNIK, Jan (avtor, fotograf). Podlubniki Pohorja. *Proteus : ilustriran časopis za poljudno prirodoznanstvo*. [Tiskana izd.]. okt. 2020-jan. 2021, letn. 83, [št.] 2/3/4/5, str. 139-143, 238-239, ilustr. ISSN 0033-1805. <http://www.dlib.si/details/URN:NBN:SI:DOC-IDYK0Y7M>. [COBISS.SI-ID 50480643]