



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Ekofiziologija členonožcev
Course title:	Ecophysiology of Arthropods

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biologija in ekologija z naravovastvom, 2. stopnja	/	1,2	Poletni/ zimski
Biology and Ecology with Nature Conservation, 2 nd cycle	/	1,2	Summer/ Winter

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Druge oblike študija	Samost. delo Individual work	ECTS
15	15		15		135	6

Nosilec predmeta / Lecturer:

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

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

Jih ni.

Prerequisites:

No prerequisites.

Vsebina:

Content (Syllabus outline):

- 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. Analiza vsebine prebavnega trakta.
- Ocenjevanje sekundarne bioprodukcije.
- Prezimovanje in presnova. Viri energije za metabolne procese pri členonožcih: glikogen in lipidi.

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

Temeljni literatura in viri / Readings:

Temeljni viri / Basic:

Schmidt-Nielsen, K., 2010: *Animal physiology: adaptation and environment*. Cambridge University Press. Cambridge.

Priporočeni viri / Recommended:

Hill, R.W., G.A. Wyse, M. Anderson, 2016: *Animal Physiology 4th Edition*. Oxford University Press, Oxford.

Moyes, C.D., P.M. Schulte, 2015: Principles of Animal Physiology. 3rd Edition. Pearson, Toronto.

Sherwood, L., H. Klandorf, P. Yancey, 2012: *Animal Physiology: From Genes to Organisms 2nd Edition*. Cengage Learning, Brooks and Cole, Belmont, USA.

Članki iz revij / Papers published in journals.

Cilji in kompetence:

- Opraviti raziskave na terenu in v laboratoriju ter povezati različne organizacijske nivoje, od molekularnega do ekosistemskega
- Podati povezavo med živalskim organizmom in njegovim zunanjim in notranjim okoljem
- Razumevanje različnih vedenjskih, fizioloških in biokemijskih strategij kot prilagoditev na določene biotske in abiotske dejavnike okolja
- Sposobnost opraviti terenske in laboratorijske ekofiziološke raziskave na različnih nivojih, od molekularnega do ekosistemskega

Objectives and competences:

- To conduct studies in the field and in laboratory, and to span different levels of organisation from the molecular to the ecosystemic one
- To give relations between animal organism and its internal and external environment
- To understand various behavioural, physiological and biochemical strategies of arthropods in interacting their biotic and abiotic environments
- Ability to conduct the in the field and laboratory ecophysiological studies at different levels, from the molecular to the ecosystemic
- Ability to evaluate results of

- Sposobnost ovrednotiti rezultate ekofizioloških poskusov s členonožci

ecophysiological experiments on arthropods

Predvideni študijski rezultati:

Po uspešno opravljeni učni enoti naj bi bili študenti zmožni:

- razpravljati in pojasniti pomen delovanja biotskih in abiotičnih dejavnikov na fiziologijo členonožcev;
- obravnavati izbrane fiziološke procese kot adaptacije na ekstremna okolja.

Intended learning outcomes:

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

- discuss and explain the role of biotic and abiotic factors in arthropod physiology;
- debate certain physiological processes in the context of adaptation to extreme environment.

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

- Lectures
- Laboratory excersises – individual experimental practice

Delež (v %) /

Weight (in %)

Načini ocenjevanja:

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt): Študent mora opraviti:

- Kolokvij iz vaj
- Seminaraska naloga
- Pisni izpit

30

30

40

Type (examination, oral, coursework, project): The following should be done:

- Partial exam of experimental practice
- Seminar essay
- Written exam

Reference nosilca / Lecturer's references:

DEVETAK, Dušan, ARNETT, Amy E. Preference of antlion and wormlion larvae (Neuroptera: Myrmeleontidae; Diptera: Vermileonidae) for substrates according to substrate particle sizes. *European Journal of Entomology*, ISSN 1210-5759, 2015, vol. 112, iss. 3, str. 500-509, doi: [10.14411/eje.2015.052](https://doi.org/10.14411/eje.2015.052). [COBISS.SI-ID [21327368](https://www.cobiss.si/id/21327368)]

DEVETAK, Dušan, KLOKOČOVNIK, Vesna. The feeding biology of adult lacewings (Neuroptera) : a review. *Trends in entomology*, ISSN 0972-4761, 2016, vol. 12, str. 29-42, ilustr. [COBISS.SI-ID [22624264](https://www.cobiss.si/id/22624264)]

KLOKOČOVNIK, Vesna, HAUPTMAN, Gregor, DEVETAK, Dušan. Effect of substrate temperature on behavioural plasticity in antlion larvae. *Behaviour*, ISSN 0005-7959, 2016, vol. 153, issue 1, str. 31-48, doi: [10.1163/1568539X-00003322](https://doi.org/10.1163/1568539X-00003322). [COBISS.SI-ID [21695496](https://www.cobiss.si/id/21695496)]