



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Komunikacija živali
Course title:	Animal Communication

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

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
15	15	15			135	6

Nosilec predmeta / Lecturer:

Vesna Klokočovnik

Jeziki /

Predavanja / Lectures: Slovenski / Slovenian

Languages:

Vaje / Tutorial: Slovenski / Slovenian

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

Jih ni.

Prerequisites:

None.

Vsebina:

Content (Syllabus outline):

<p>Oddajanje, prenos in sprejemanje informacije</p> <ul style="list-style-type: none"> •Zvok (lastnosti, oddajanje, širjenje, sprejemanje) •Svetloba (lastnosti, oddajanje in prenos ter sprejemanje svetlobnih signalov) •Kemični signali (splošne lastnosti, oddajanje, širjenje in sprejemanje kemičnih signalov) •Elektrorepcija (lastnosti električnega polja, ustvarjanje bio-električnih polj, električna polja in medij, zaznavanje električnih signalov, komunikacija in električni signali)Optimizacija prenosa informacije <p>Optimizacija komunikacije</p> <ul style="list-style-type: none"> •Količina informacije •Vrednost informacije •Kodiranje •Evolucija signalov •Cena in pritiski razvoja signalov •Pravila oblikovanja signalov <p>Teorija igre in strategije signaliziranja</p> <ul style="list-style-type: none"> •Evolucijska teorija igre •Poštenost signaliziranja •Reševanje konfliktov •Igre teritorialnega signaliziranja •Signaliziranje v času parjenja •Socialna integracija •Signali okolja •Avtokomunikacija

<p>Production, transmission and reception of signals</p> <ul style="list-style-type: none"> •Sound (properties, production, propagation, reception) •Light (properties, production, transmission and reception of light signals) •Chemical signals (general features, production, transmission and reception of chemical signals). •Electroreception (properties of electric fields, generation of bio-electric fields, coupling of electric signals to the medium, reception of electric signals, communication and electric signals)Optimizing information transfer <p>Optimizing communication</p> <ul style="list-style-type: none"> •The amount of information •The value of information •Coding •Signal evolution •Costs and constraints on signal evolution •Signal design rules <p>Game theory and signalling strategies</p> <ul style="list-style-type: none"> •Evolutionary game theory •Signal honesty •Conflict resolution •Territorial signalling games •Mating games and signalling •Social integration •Environmental signals •Autocommunication

Temeljni literatura in viri / Readings:

<p>Temeljna literatura/Basic literature: Bradbury, J. W., Vehrencamp, S. (2011). Principles of Animal Communication, 2nd ed. Sinauer Associates Inc., Publisher.</p> <p>Priporočena literatura/Recommended literature: Rubenstein, D.R., Alcock, J., (2018). Animal behavior. 11th ed. Oxford University Press. Halliday, T. (1998). The Senses and Communication. Springer. Hill, P. S.M. (2008). Vibrational communication in animals. Cambridge ; London : Harvard University Press. d'Ettorre P., Hughes, D. P. (2008). Sociobiology of communication : an interdisciplinary perspective. Oxford, New York : Oxford University Press.</p>
--

Cilji in kompetence:

Objectives and competences:

- razumejo in pojasnijo temeljna načela pri prenosu signala od oddajnika do sprejemnika;
- pojasnijo pomen komunikacijskega kanala in občutljivosti čutil pri prenosu signala;
- razložijo komunikacijske procese v različnih kontekstih vedenja;
- pojasnijo temelje evolucije in optimizacije komunikacije.

- understand and explain basic principles in signal transmission from sender to receiver;
- explain the role of communication channel and sensitivity of the sensory organs in signal transmission;
- explain communication processes in different behavioural contexts;
- explain basic principles of evolution and optimization of communication.

Predvideni študijski rezultati:

Po uspešno opravljeni učni enoti naj bi bili študenti zmožni:

- Razumeti in pojasniti načela komunikacije med organizmi
- Razložiti različne poti komuniciranja ter pojasniti pomen komunikacijskega signala
- Na primerih razložiti različno občutljivost čutil pri prenosu signala
- Na primerih pojasniti strategije signaliziranja
- Zasnovati in izvesti eksperiment
- Interpretirati rezultate
- Napisati in predstaviti seminarsko nalogo

Intended learning outcomes:

After the course, students are able to:

- Understand and explain the principles of communication between organisms
- Explain variety of communication channels and explain the significance of communication signals
- Explain sensitivity of different sensory organs
- Explain the strategies of signalling in different examples
- Plan and perform an experiment
- Interpret the results
- Write and present a seminar essay

Metode poučevanja in učenja:

Predavanja
Seminar
Laboratorijske vaje

Learning and teaching methods:

Lectures
Seminar
Laboratory exercises

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Weight (in %)	Type (examination, oral, coursework, project):
Individualno eksperimentalno delo s predstavitvijo	50	Individual experimental work with presentation
Pisni izpit	50	Written exam

Reference nosilca / Lecturer's references:

KLOKOČOVNIK, Vesna, DEVETAK, Dušan. Pit-builder vs non-pit-builder : advantage of trap building strategy in antlion larvae does not mean greater behaviour diversity. *Behaviour*, ISSN 0005-7959, 2014, vol. 151, issue 5, str. 653-668, ilustr.

<http://booksandjournals.brillonline.com/content/journals/10.1163/1568539x-00003156>, doi: [10.1163/1568539X-00003156](https://doi.org/10.1163/1568539X-00003156). [COBISS.SI-ID [20356872](https://www.cobiss.si/id/20356872)]

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)]

KLOKOČOVNIK, Vesna, ŠORGO, Andrej, DEVETAK, Dušan. Hands-on experiments on predatory behaviour with antlion larvae. *Journal of Biological Education*, ISSN 0021-9266, 2016, vol. 50, no. 4, str. 384-394, ilustr., doi: [10.1080/00219266.2015.1117513](https://doi.org/10.1080/00219266.2015.1117513). [COBISS.SI-ID [21928200](https://www.cobiss.si/id/21928200)]