



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Fiziologija živali
Course title:	Animal Physiology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Univerzitetni študijski program Biologija, 1. stopnja	/	3	6
Undergraduate university programme Biology, 1 st degree	/	3	6

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		30			105	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:

Zunanje in notranje okolje.
 Energetika celice. Energetika organizma.
 Temperatura in termoregulacija.
 Fiziologija membran: od zgradbe membrane do živčne integracije.
 Senzorična fiziologija: čutila in zaznavanje okolja.
 Hormoni in endokrini sistem.
 Celično gibanje, mišice in gibanje živali.
 Živčevje in vedenje.
 Kri in krvžilni sistem.
 Izmenjava plinov – dihanje.
 Ionsko in osmotsko ravnotežje.
 Prehrana in prebava.

Content (Syllabus outline):

External and internal environments.
 Cellular energetics. Animal energetics.
 Temperature and thermoregulation.
 Membrane physiology: from membrane structure to neural integration.
 Sensory physiology: sensory organs and sensing the environment.
 Hormones and endocrine system.
 Cell movement, muscles and animal movement.
 Nervous system and behaviour.
 Blood and circulation.
 Gas exchange – respiration.
 Ionic and osmotic balance.
 Feeding and digestion.

Temeljni literatura in viri / Readings:

Temeljna literatura / Basic:

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

Priporočena literatura / Recommended:

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

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

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

Ashcroft F. 2011: Življenje v skrajnostih: umetnost preživetja. Zavod Republike Slovenije za šolstvo, Ljubljana.

Cilji in kompetence:

- Obravnavati zveze živalski organizem – zunanje okolje – notranje okolje
- Pojasniti vlogo celičnih membran pri temeljnih fizioloških procesih
- Pojasniti integracijsko vlogo senzoričnega, hormonalnega in živčnega sistema
- Predstaviti temeljne fiziološke procese v živalskem organizmu

Objectives and competences:

- To discuss relations: animal organism – internal environment – external environment
- To explain the role of cell membranes in general physiological processes
- To explain integrative role of sensory, hormonal and nervous system
- To present fundamental physiological processes in animal organisms.

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Predvideni študijski rezultati:

Po uspešno opravljeni učni enoti naj bi bili študenti zmožni:

- opisati vlogo membran pri temeljnih fizioloških procesih;
- razložiti zgradbo organov in povezavo zgradbe s funkcijo;
- načrtovati ter izvajati eksperiment in izsledke interpretirati;
- razumeti in zagovarjati etične principe pri poskusih na živalih.

Intended learning outcomes:

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

- explain the role of membranes in basic physiological processes;
- explain the structure of organs and the relationship of structure to function;
- design, conduct and report on experiments in animal physiology;
- explain and defend ethical approach in animal experiment.

Metode poučevanja in učenja:

Predavanja
Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

Lectures
Laboratory exercises – individual experimental practice

Načini ocenjevanja:

2 kolokvija in poročilo iz vaj
Pisni izpit

Opravljen kolokvija in poročilo sta pogoj za pristop k izpitu.

Delež (v %) /

Weight (in %)

Assessment:

2 partial exams and report of experimental practice
Written exam
Partial exams and laboratory report are a prerequisites for taking the exam.

Reference nosilca / Lecturer's references:

MARTINEZ, Vanessa, SILLAM-DUSSES, 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*. maj 2023 (in press).

DEVETAK, Dušan, PODLESNIK, Jan, SCHARF, Inon, KLENOVŠEK, Tina. Fine sand particles enable antlions to build pitfall traps with advanced three-dimensional geometry. *Journal of Experimental Biology*. Aug. 2020, vol. 223, no. 15, str. 1-10. ISSN 0022-0949. DOI: 10.1242/jeb.224626. [COBISS.SI-ID 28827907]

PODLESNIK, Jan, JAKŠIĆ, Predrag N., NAHIRNIĆ, Ana, JANŽEKOVIČ, Franc, KLENOVŠEK, Tina, KLOKOČOVNIK, Vesna, DEVETAK, Dušan, et al. Fauna of the brown lacewings of Serbia (Insecta: Neuroptera: Hemerobiidae). *Acta entomologica slovenica*. jun. 2019, vol. 27, št. 1, str. 17-29, zvd. ISSN 1318-1998. <http://www.dlib.si/details/URN:NBN:SI:doc-EFR3WIIU>. [COBISS.SI-ID 2027509]

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. [COBISS.SI-ID 24646664], [JCR, SNIP]

DEVETAK, Dušan, PODLESNIK, Jan, KLOKOČOVNIK, Vesna. Predator-prey interactions in antlions: transmission of vibrational signals deep into the sand. *Acta entomologica slovenica*, ISSN 1318-1998, dec. 2018, vol. 26, št. 2, str. 121-130, ilustr. [COBISS.SI-ID [1957365](#)]