



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	<b>Splošna zoologija</b>
<b>Course title:</b>	<b>Fundamentals of Zoology</b>

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biologija, 1. stopnja Biology, 1 <sup>st</sup> cycle		1.; 1 <sup>st</sup>	2.; 2 <sup>nd</sup>

**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
45			45		90	6

**Nosilec predmeta / Lecturer:**

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

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

**Prerequisites:**

**Vsebina:**

- Osnovne značilnosti živali in živalske celice.
- Osnovni taksonomski in filogenetski pregled živali. Delitev živali glede na različne kriterije.
- Zunanja zgradba glavnih skupin živali.
- Osnovna zgradba, vloga in delovanje živalskih tkiv: epitelno in žlezno tkivo, veziva in opornine, mišično tkivo, živčno tkivo.
- Zgradba, delovanje in vloga organskih

**Content (Syllabus outline):**

- Basic characteristics of animals and animal cells.
- Basic taxonomic and phylogenetic overview of animals. Division of animals according to various criteria.
- External structure of major animal groups.
- Basic structure, role and function of animal tissues: epithelial and gland tissues, connective and skeletal tissues, muscle tissue, nervous tissue.

sistemov in organov živali: integument, ogrodje, gibala, prehranjevanje in prebavila, dihanje in dihala, organi za transport snovi, osmoregulacija, izločanje in izločala, čutila, živčevje, endokrini sistem, reproduktivni sistem.

- Pregled in primerjava organskih sistemov pri glavnih skupinah živali.
- Različni načini in zakonitosti nespolnega in spolnega razmnoževanja. Ontogenetski razvoj.
- Laboratorijske vaje se navezujejo na vsebino posameznih poglavij iz predavanj s poudarkom na spoznavanju histologije, morfologije in anatomije živali in njihovih struktur.

- Structure, role and function of organ systems and organs of animals: integumentary system, skeleton, motion organs, feeding and digestion organs, breathing and respiratory organs, circulatory systems, osmoregulation, excretion and excretory systems, sense organs, nervous system, endocrine system, reproductive system.
- Overview and comparison of organ systems in the major animals groups.
- Different types and characteristics of asexual and sexual reproduction. Ontogenetic development.
- Laboratory exercises are linked with the content of individual lectures with emphasis on histology, morphology and anatomy of animals and their structures.

#### **Temeljni literatura in viri / Readings:**

Hickman, C. P. Jr., Roberts, L. S., Keen, Susan L., Eisenhour, D. J., Larson, A., l'Anson, H., 2014: Integrated Principles of Zoology. McGraw Hill. New York.

Štrus, J., 2002: Splošna zoologija. 2. popravljena izd. Študentska založba. Ljubljana.

Miller, S. A., Harley, J. P., 2010: Zoology. McGraw-Hill Higher education, Boston, USA.

Klenovšek, T., Lipovšek Delakorda, S., 2013: Splošna zoologija : kompendij z navodili za vaje za študijski program Biologija. Maribor: Fakulteta za naravoslovje in matematiko, Oddelek za biologijo.

#### **Cilji in kompetence:**

Študentje bodo pridobili temeljno znanje in razumevanje:

- o značilnostih živalskih organizmov in zakonitosti življenja živali z vidika raznolikosti in obenem enotnosti.
- osnovne zgradbe živalskih organizmov in njihovo delovanje na nivoju celic, tkiv, organov, organskih sistemov in skupnosti organizmov.
- osnovnih procesov razvoja in razmnoževanja živalskih organizmov.

Študentje bodo pridobili tudi spretnosti in

#### **Objectives and competences:**

Students will gain fundamental knowledge and understanding of:

- characteristics of animal organisms and principles of animal life from the aspect of variation as well as uniformity.
- basic structure of animal organisms and their function on the level of cells, tissues, organs, organ systems and associations of animals.
- of the basic processes in animal development and reproduction.

Students will also gain skills and practical abilities for microscopy, dissection of animals,

praktične sposobnosti mikroskopiranja, sekcije živali, prepoznavanja in poimenovanja histoloških, morfoloških in anatomskih struktur živalskih organizmov.

recognition and naming of histological, morphological and anatomical structures of animal organisms.

**Predvideni študijski rezultati:**

Po opravljenem kurzu naj bi bili študentje sposobni:

- našteti in opisati glavne značilnosti živali in živalske celice.
- opisati in pojasniti osnovno taksonomsko in filogenetsko delitev živali glede na različne kriterije.
- opisati in razlikovati zunanjo telesno zgradbo glavnih skupin živali.
- opisati in razlikovati živalska tkiva in pojasniti njihovo vlogo in delovanje.
- navesti in pojasniti zgradbo, delovanje in vlogo organov in organskih sistemov pri različnih skupinah živali.
- opisati različne načine in zakonitosti spolnega in nespolnega razmnoževanja in ontogenetskega razvoja.
- samostojno mikroskopirati s svetlobnim mikroskopom.
- po navodilih samostojno in varno secirati manjšo žival.
- prepoznati in poimenovati najpomembnejše strukture na mikroskopskih in makroskopskih preparatih živali.

**Intended learning outcomes:**

After the accomplished course the students should be able to:

- list and describe the main characteristics of the animals and animal cells.
- describe and clarify the basic taxonomic and phylogietic division of animals according to different criteria.
- describe and distinguish the external body structure of the main groups of animals.
- describe and distinguish animal tissues and clarify their role and function.
- indicate and clarify the structure, function and role of organs and organ systems in different animal groups.
- describe different types of sexual and asexual reproduction and ontogenetic development.
- independetly use the light microscope.
- following instructions, independently and safely dissect a smaller animal.
- identify and name the most important structures on micropskopic and macroscopic preparations of animals.

**Metode poučevanja in učenja:**

- Predavanja
- Laboratorijske vaje

**Learning and teaching methods:**

- Lectures
- Laboratory excersises

<b>Načini ocenjevanja:</b>	Delež (v %) / Weight (in %)	<b>Assessment:</b>
<ul style="list-style-type: none"> <li>• Kolokvij in poročilo iz vaj</li> <li>• Pisni izpit</li> </ul> <p>Poročilo iz vaj je pogoj za pristop h kolokviju iz vaj. Opravljen kolokvij iz vaj je pogoj za pristop k izpitu.</p>	50  50	<ul style="list-style-type: none"> <li>• Report and exam from laboratory exercises</li> <li>• Written exam</li> </ul> <p>Report from laboratory exercises is a prerequisite for the exam from laboratory exercises, which is both a prerequisite for the final exam.</p>

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**Reference nosilca / Lecturer's references:**

KLENOVŠEK, Tina, JOJIĆ, Vida. Modularity and cranial integration across ontogenetic stages in Martino's vole, *Dinaromys bogdanovi*. Contributions to zoology, ISSN 1383-4517, 2016, vol. 85, no. 3, str. 275-289, ilustr. [COBISS.SI-ID 22437384]

KRYŠTUFEK, Boris, JANŽEKVIČ, Franc, HUTTERER, Rainer, KLENOVŠEK, Tina. Morphological evolution of the skull in closely related bandicoot rats : a comparative study using geometric morphometrics. Hystrix: the italian journal of mammalogy, ISSN 0394-1914, 2016, vol. 27, no. 2, str. 1-7, ilustr., doi: 10.4404/hystrix-27.2-11639. [COBISS.SI-ID22920456]

KRYŠTUFEK, Boris, KLENOVŠEK, Tina, AMORI, Giovanni, JANŽEKVIČ, Franc. Captured in "continental archipelago": phylogenetic and environmental framework of cranial variation in the European snow vole. Journal of zoology, ISSN 0952-8369, 2015, vol. 297, iss. 4, str. 270-277, doi: 10.1111/jzo.12274. [COBISS.SI-ID 21572872]

KLENOVŠEK, Tina, KRYŠTUFEK, Boris. An ontogenetic perspective on the study of sexual dimorphism, phylogenetic variability, and allometry of the skull of European ground squirrel, *Spermophilus citellus* (Linnaeus, 1766). Zoomorphology, ISSN 0720-213X, 2013, vol. 132, iss. 4, str. 433-445, doi: 10.1007/s00435-013-0196-1. [COBISS.SI-ID 19948296]