



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Sistematika in filogenija vretenčarjev
Course title:	Systematics and phylogeny of vertebrates

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Ekologija z naravovarstvom, 1. stopnja		2.	3
Ecology with Nature Conservation, 1 st cycle		2 st	3 rd

Vrsta predmeta / Course type

Obvezni / Compulsory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30			30		90	5

Nosilec predmeta / Lecturer:

Franc Janžekovič

**Jeziki /
Languages:**

**Predavanja /
Lectures:** slovenščina / Slovene

Vaje / Tutorial: slovenščina / Slovene

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

Jih ni.

Prerequisites:

None.

Vsebina:

Diverziteta in diagnoza strunarjev
Vretenčarji
Evolucijski nastanek strunarjev, filogenetski odnosi in adaptivna radiacija.
Sistematika, nomenklatura in sistematski znaki
Funkcionalna anatomija vretenčarjev
Zgodnji razvoj in embriologija vretenčarjev

Content (Syllabus outline):

Diversity and diagnosis of Chordates
Vertebrates
Origin of chordates, phylogenetic relationships and adaptive radiations
Systematics, nomenclature and systematic signs
Functional anatomy of vertebrates
Early development and embryology

Biologija posameznih skupin vretenčarjev in njihova vloga v okolju
Laboratorijske in terenske vaje se navezujejo na vsebino posameznih poglavij iz predavanj s poudarkom na spoznavanju morfologije in anatomije živali in njihovih struktur

Biology of vertebrate groups and their role within the environment
Laboratory and field exercises are linked with the content of individual lectures with emphasis on morphology and anatomy of animals and their structures

Temeljni literatura in viri / Readings:

Osnovna literatura:

- Liem, K. F., Bemis, W. E., Walker, W. F. , Grande L. (2001 in novejša izdaja). Functional Anatomy of the Vertebrates. An Evolutionary Perspective. Harcourt College Publishers.

Dodatna literatura:

- Kent, G., R. Carr, K. (2001 in novejša izdaja). Comparative anatomy of the vertebrates. McGraw-Hill Higher Education.
- Kardong, K. V. (2011 in novejša izdaja). Vertebrates: comparative anatomy, function, evolution. McGraw- Hill Companies.
- Pough, F. H., Janis, C. M., Heiser J.B. (2005). Vertebrate Life. Pearson Education International.
- Storch, V., Welsch, U. (2004). Systematische Zoologie. Spektrum Akademischer Verlag Heidelberg.
- Kryštufek, B., Janžekovič F. (1999). Ključ za določanje vretenčarjev Slovenije. DZS.
- Bavdek, S. V., Golob, Z., Janžekovič, F. , Kubale Dvojmoč, V., Skok J. (2015). Osnove primerjalne anatomije vretenčarjev. Veterinarska fakulteta Univerza v Ljubljani.

Cilji in kompetence:

Študentje bodo pridobili temeljno znanje in razumevanje:

- telesne zgradbe vretenčarjev
- sistema vretenčarjev
- evlucijskega nastanka vretenčarjev, filogenetskih odnosov in adaptivne radiacije
- metod dela in znanstvenih načel v sistematiki vretenčarjev
- ekomorfoloških ter funkcionalno anatomskih lastnosti vretenčarjev
- embriološkega razvoja vretenčarjev

Objectives and competences:

Students will gain fundamental knowledge and understanding of:

- Bodyplan of vertebrates
- Vertebrate system
- Evolution of vertebrates, phylogenetic relationships and adaptive radiation
- Methods and scientific principles in the vertebrate systematic
- Ecomorphological and functional anatomical characteristics of vertebrates
- Embryological development of vertebrates

Predvideni študijski rezultati:

Intended learning outcomes:

Po opravljenem kurzu naj bi bili študentje sposobni:

- naštet in opisati glavne značilnosti strunarjev in vretenčarjev
- opisati in razlikovati zunanjo in notranjo telesno zgradbo glavnih skupin vretenčarjev
- prepoznavati in določati vretenčarje
- razložiti ekološko vlogo vretenčarjev v ekosistemih
- razložiti filogenetske odnose med glavnimi skupinami vretenčarjev
- uporabljati osnovne metode dela v sistematiki, taksonomiji in ekologiji vretenčarjev
- opisati različne načine in zakonitosti razmnoževanja in ontogenetskega razvoja.

After the accomplished course the students should be able to:

- list and describe the main characteristics of the Chordates and Vertebrates
- describe and distinguish the external and internal body structure of the main groups of Vertebrates
- recognition and identification of vertebrates.
- explain the meaning and understanding of ecological role in ecosystems.
- explain the meaning of phylogenetic relationships among major vertebrates groups.
- using of basic methods in systematics and ecology of vertebrates.
- describe different types of reproduction and ontogenetic development

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske in terenske vaje

Learning and teaching methods:

- Lectures
- Laboratory and field exercises

Načini ocenjevanja:

- Ustni izpit
- Laboratorijsko delo

Delež (v %) /

Weight (in %)

Assessment:

- Oral exam
- Laboratory work

Opomba: Študent v okviru laboratorijskega dela opravlja kolokvij 1 iz latinskimi imeni vretenčarjev in kolokvij 2 iz vaj.

Note: As a part of laboratory work, the student takes exam 1 on Latin names of vertebrates and exam 2 from exercises.

Reference nosilca / Lecturer's references:

KLENOVŠEK, Tina, JOJIĆ, Vida, KRYŠTUFEK, Boris, JANŽEKOVICH, Franc, DJURAKIC, Marko. Patterns of morphological and molecular divergence of Apodemus (Rodentia: Muridae) species from the Western Palaearctic. *Hystrix : the italian journal of mammalogy*. 2026, 54 str. ISSN 0394-1914. <https://doi.org/10.4404/hystrix-00813-2025>, Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: [10.4404/hystrix-00813-2025](https://doi.org/10.4404/hystrix-00813-2025), DOI: [20.500.12556/DKUM-97056](https://doi.org/10.500.12556/DKUM-97056). [COBISS.SI-ID [268450819](https://doi.org/10.4404/hystrix-00813-2025)]

KRYŠTUFEK, Boris, SHENBROT, Georgy I., KLENOVŠEK, Tina, JANŽEKOVICH, Franc. Geometric morphometrics of mandibular shape in the dwarf fat-tailed jerboa : relevancy for trinomial taxonomy. *Zoological journal of the Linnean Society*. Aug. 2021, vol. 192, iss. 4, str. 1363-1372, ilustr. ISSN 0024-4082. DOI: [10.1093/zoolinnean/zlaa130](https://doi.org/10.1093/zoolinnean/zlaa130). [COBISS.SI-ID 43093251]

KLENOVŠEK, Tina, POLAK, Slavko, JANŽEKOVICH, Franc, NOVAK, Tone, KOZEL, Peter. Mandibular morphology in Leptodirini beetles (Leiodidae: Cholevinae) shows habitat-specific disparity across the karstic vertical profile. *Zoological journal of the Linnean Society*. 2025, vol. 205, iss. 1, [article no.] zlaf127, 15 str., ilustr. ISSN 0024-4082. DOI: [10.1093/zoolinnean/zlaf127](https://doi.org/10.1093/zoolinnean/zlaf127). [COBISS.SI-ID [250230531](https://cobiss.si/id/250230531)]