



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:

Content (Syllabus outline):

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 Biologija posameznih skupin vretenčarjev in njihova vloga v okolju Laboratorijske vaje se navezujejo na vsebino posameznih poglavij iz predavanj s poudarkom na spoznavanju, morfologije in anatomije živali in njihovih struktur	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 Biology of vertebrate groups and their role within the environment Laboratory 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., ~~W. E.~~ Bemis, ~~W. E.~~, ~~W. F.~~ Walker, ~~W. F.~~, ~~L.~~ Grande ~~L.~~ (2001 in novejša izdaja). Functional Anatomy of the Vertebrates. An Evolutionary Perspective. Harcourt College Publishers. ~~Orlando.~~

Dodatna literatura:

- Kent, G., R. ~~K.~~ Carr, ~~K.~~ (2001 in novejša izdaja). Comparative anatomy of the vertebrates. McGraw-Hill Higher Education. ~~New York.~~
- Kardong, K. V. (2011 in novejša izdaja). Vertebrates: comparative anatomy, function, evolution. McGraw-Hill Companies. ~~New York.~~
- Pough, F. H., ~~C. M.~~ Janis, ~~C. M.~~, ~~J. B.~~ Heiser ~~J. B.~~ (2005). Vertebrate Life. Pearson Education International. ~~New Jersey.~~
- Storch, V., ~~U.~~ Welsch, ~~U.~~ (2004). Systematische Zoologie. Spektrum Akademischer Verlag Heidelberg. ~~Berlin.~~
- ~~Dorit R.L., W. F. Walker, R. D. Barnes (1991 in novejša izdaja) Zoology. Saunders College Publishing. Philadelphia.~~
- ~~Kalezić M. (2001) Osnovi morfologije kičmenjaka. Zavod za udžbenike i nastavna sredstva. Beograd.~~
- Kryštufek, B., ~~F.~~ Janžekovič ~~F.~~ (1999). Ključ za določanje vretenčarjev Slovenije. DZS. ~~Ljubljana.~~
- Bavdek, S. V., ~~Z.~~ Golob, ~~Z.~~, ~~F.~~ Janžekovič, ~~F.~~, ~~V.~~ Kubale Dvojmoč, ~~V.~~, ~~J.~~ Skok ~~J.~~ (2015). Osnove primerjalne anatomije vretenčarjev. Veterinarska fakulteta Univerza v Ljubljani. ~~Ljubljana.~~

Cilji in kompetence:

Objectives and competences:

Študentje bodo pridobili temeljno znanje in razumevanje:

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

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:

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 ekosistemi
- 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.

Intended learning outcomes:

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 vaje

Learning and teaching methods:

- Lectures
- Laboratory exercises

Načini ocenjevanja:

- Ustni izpit,
- kolokvij

Delež (v %) /

Weight (in %)

Assessment:

	70	• Oral exam,
	30	• Exercises exam

Reference nosilca / Lecturer's references:

JANŽEKOVIČ, Franc, KLENOVŠEK, Tina, MLÍKOVSKÝ, Jiří, TOŠKAN, Borut, VELUŠČEK, Anton. Eneolithic pile dwellers captured waterfowl in winter : analysis of avian bone remains from two pile dwellings in Ljubljansko barje (Slovenia). International journal of osteoarchaeology. [Print ed.]. 2021, vol. 31, iss. 6, str. 977-986, ilustr. ISSN 1047-482X. DOI: 10.1002/oa.3012. [COBISS.SI-ID 67079683]

KRYŠTUFEK, Boris, SHENBROT, Georgy I., KLENOVŠEK, Tina, JANŽEKOVIČ, 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/zoolinnea/zlaa130. [COBISS.SI-ID 43093251]

KOZEL, Peter, NOVAK, Tone, JANŽEKOVIČ, Franc, LIPOVŠEK DELAKORDA, Saška. Starvation hardiness as preadaptation for life in subterranean habitats. Scientific reports. 2023, vol. 13, article no. 9643, 18 str., ilustr. ISSN 2045-2322. Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: 10.1038/s41598-023-36556-9, DOI: 20.500.12556/DKUM-86400. [COBISS.SI-ID 155869443]

KRYŠTUFEK, Boris, STANCIU, Cătălin-Răzvan, IVAJNŠIČ, Danijel, CHERKAOUI, Sidi Imad, JANŽEKOVIČ, Franc. Facts and misconceptions on the Palaearctic existence of the striped ground squirrel. *Mammalia*. 2018, vol. 82, iss. 3, str. 248-255

JANŽEKOVIČ, Franc, POLC, Mateja, PETOVAR, Polona, KLENOVŠEK, Tina. Diet of the Tawny Owl *Strix aluco* in the area of Slovenske gorice (NE Slovenia). *Acrocephalus*. 2017, vol. 38, issues 172/173, str. 45-53

BAVDEK, Srdan V., GOLOB, Zlatko, JANŽEKOVIČ, Franc, RUTLAND, C, KUBALE, Valentina. Skull of the grey heron (*Ardea cinerea*): Detailed investigation of the orbital region. *Anatomia, Histologia, Embryologia*. 2017, vol. 46, no. 1, str. 552-557.

MAHMOUDI, Ahmad, KRYŠTUFEK, Boris, DARVISH, Jamshid, ALIABADIAN, Mansour, YAZDI, Fatemeh Tabatabaei, MOGHADDAM, Faezeh Yazdani, JANŽEKOVIČ, Franc. Craniometrics are not outdated : interspecific morphological divergence in cryptic arvicoline rodents from Iran. *Zoologischer Anzeiger*, 2017, vol. 270, str. 9-18.

KRYŠTUFEK, Boris, POZDNYAKOV, Aleksandr A., IVAJNŠIČ, Danijel, JANŽEKOVIČ, Franc. Low phenotypic variation in eastern common hamsters *Cricetus cricetus*. *Folia Zoologica*, ISSN 0139-7893, 2016, vol. 65, iss. 2, str. 148-156.