Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Ekologija krasa**
Course title:	Karst Ecology

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

Vrsta predmeta / Course type	Izbirni / Elective
Univerzitetna koda predmeta / University course code:	

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Teren. vaje** **Field work**	**Samost. delo** **Individual work**	**ECTS**
25	20				135	6

Nosilec predmeta / Lecturer:	Tanja PIPAN

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Jih ni.	No prerequisites.

Vsebina:	**Content (Syllabus outline):**

Slušatelji se bodo v okviru predmeta seznanili z osnovami ekologije krasa, z biologijo kraških površinskih in podzemeljskih habitatov ter njihovo biodiverziteto. Spoznali bodo biotske procese, značilne za kraške ekosisteme, vključno s procesi evolucije in adaptacije, kolonizacije in speciacije, vire energije v podzemeljskih habitatih, ekologijo kraških združb, biogeografijo ter naravovarstvo.	Students will be introduced into karst ecology, biology of karst epigean and subterranean habitats and their biodiversity. The course content includes biotic processes characteristic for karst ecosystems, including evolution and adaptation, colonization and speciation, ecosystem function, sources of energy in subterranean habitats, ecology of karst communities, biogeography, and nature conservation.

Temeljni literatura in viri / Readings:

Obvezni vir / Mandatory source:

Culver D. C., Pipan T. 2019. The biology of caves and other subterranean habitats, (Biology of habitats). 2nd ed. New York: Oxford University Press.

Priporočeno branje / Recommended reading:

Culver D. C., Kane T. C., Fong D. W. 1995. Adaptation and natural selection in caves. The evolution of *Gammarus minus*. Cambride: Harvard University Press.

Culver D. C., Pipan T. 2019. Ecological and evolutionary classifications of subterranean organisms. V: White, W. B. (ur.), Culver, D. C. (ur.), Pipan, T. (ur.). Encyclopedia of caves. 3rd ed. London [etc.]: Elsevier, Academic Press.

Culver D. C., Pipan T. 2014. Shallow subterranean habitats : ecology, evolution, and conservation. 1st ed. Oxford: Oxford University Press.

Gibert J., Danielopol D. L., Stanford J. 1994. Groundwater ecology. San Diego: Academic Press.

Gibert J., Mathieu J., Fournier F. 1997. Groundwater/surface water ecotones: Biological and hydrological interactions and management options. Cambridge: Cambridge University Press.

Griffiths H. I., Kryštufek B., Reed J. M. 2004. Balkan biodiversity. Pattern and process in the European hotspot. Kluwer, Dordrecht: The Netherlands.

Pipan T., Culver D. C. 2019. Wetlands in cave and karst regions. V: White, W. B. (ur.), Culver, D. C. (ur.), Pipan, T. (ur.). Encyclopedia of caves. 3rd ed. London [etc.]: Elsevier, Academic Press. cop. 2019, str. 1156-1164, ilustr. [COBISS.SI-ID 44674605]

Romero A. 2009. Cave Biology. Life in darknes. Cambridge: Cambridge University Press.

Wilkens H., Culver D. C., Humphreys W. 2000. Ecosystems of the World. Subterranean Ecosystems. Amsterdam: Elsevier.

Cilji in kompetence:	Objectives and competences:
Cilj predmeta je podati študentom poznavanje vodnih in terestričnih kraških habitatov, razumevanje in poznavanje osnovnih fizikalno kemijskih in bioloških razlik med globokimi in plitvimi podzemeljskimi habitati, razumevanje biologije, ekologije in evolucije kraških habitatov ter osnovne naravovarstvene vidike. Študenti se usposobijo za ekološko raziskovalno delo na področju kraških habitatov.	The main goal of this course is to give students the knowledge of aquatic and terrestrial karst habitats, understanding and knowledge of basic physico-chemical and biological differences between deep and shallow subterranean habitats, understanding of biology, ecology, and evolution of karst habitats and their conservation aspects. Students are trained to ecological research in karst habitats.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Po uspešno opravljeni učni enoti naj bi bili študenti zmožni: - opredeliti posamezne kopenske in vodne kraške habitate ter določiti njihove fizikalno kemijske in biološke parametre; - razumeti in zagovarjati odvisnost podzemeljskih habitatov od kraškega površja; - opisati glavne pristope v smeri raziskovanja biologije in ekologije podzemeljskih habitatov; - opisati, primerjati, razlikovati in razumeti metodologije vzorčenja, standardizacijo rezultatov in baz podatkov, ki se uporabljajo za razumevanje ekologije, biologije in evolucije kraških habitatov in njihovo biodiverziteto.	By the end of this course students should be able to: - explain individual terrestrial and aquatic karst habitats, and define their physico-chemical and biological characteristics; - understand and defend dependence of subterranean habitats from karst surface: - describe the main approaches to researching biology and ecology of subterranean habitats; - describe, compare, differentiate and understand sampling methodologies, standardize results and databases that are used to understand the ecology, biology and evolution of karst habitats and their biodiversity.
Metode poučevanja in učenja:	**Learning and teaching methods:**

● Predavanja ● Seminar ● Individualno delo na izbrani raziskavi in predstavitev	● Lectures ● Seminar ● Individual work on a selected investigation and its presentation

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Kratka seminarska naloga in njena predstavitev Pisni izpit	50% 50%	Short written seminar and its presentation Written exam

Reference nosilca / Lecturer's references:

CULVER, David C., PIPAN, Tanja. The biology of caves and other subterranean habitats, (Biology of habitats). 2nd ed. New York: Oxford University Press, 2019. XX, 301 str., ilustr. ISBN 978-0-19-882076-5. ISBN 978-0-19-882077-2. [COBISS.SI-ID 44574765]

MAMMOLA, Stefano, PIANO, Elena, CARDOSO, Pedro, VERNON, Philippe, DOMÍNGUEZ-VILLAR, David, CULVER, David C., PIPAN, Tanja, ISAIA, Marco. Climate change going deep : the effects of global climatic alterations on cave ecosystems. The anthropocene review, ISSN 2053-020X, May 29, 2019, 19 str. https://journals.sagepub.com/doi/10.1177/2053019619851594, doi: 10.1177/2053019619851594. [COBISS.SI-ID 44672045]

PIPAN, Tanja, CULVER, David C., PAPI, Federica, KOZEL, Peter. Partitioning diversity in subterranean invertebrates : the epikarst fauna of Slovenia. PloS one, ISSN 1932-6203, May 2, 2018, vol. 13, iss. 5, str. 1-19, ilustr. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195991, doi: 10.1371/journal.pone.0195991. [COBISS.SI-ID 42928941]

MEJIA-ORTIZ, Luis M., PIPAN, Tanja, CULVER, David C., SPROUSE, Peter. The blurred line between photic and aphotic environments : a large Mexican cave with almost no dark zone. International journal of speleology, ISSN 0392-6672, Jan. 2018, vol. 47, iss. 1, str. 69-80, ilustr., doi: 10.5038/1827-806X.47.1.2155. [COBISS.SI-ID 42387245]

PIPAN, Tanja, PETRIČ, Metka, ŠEBELA, Stanka, CULVER, David C. Analyzing climate change and surface-subsurface interactions using the Postojna Planina Cave System (Slovenia) as a model system. Regional environmental change, ISSN 1436-3798, 2018, vol. , iss. , str. 1-11, ilustr. https://link.springer.com/article/10.1007%2Fs10113-018-1349-z, doi: 10.1007/s10113-018-1349-z. [COBISS.SI-ID 42929197]