



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Prostorsko modeliranje v ekologiji
Course title:	GIS-based Modeling in Ecology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Doktorski študij Ekološke znanosti, 3. stopnja		1. ali 2.;	1.- 4.;
Doctoral Study Ecological Sciences, 3rd degree		1st or 2nd	1st-4th

Vrsta predmeta / Course type: Izbirni/Elective

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
10	5		15		150	6

Nosilec predmeta / Lecturer: Danijel Ivajnšič

Jeziki / Predavanja / Lectures: slovenski / Slovene
Languages: Vaje / Tutorial: slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti: Jih ni.
Prerequisites: None.

Vsebina:

- Geografski informacijski sistemi in prostorski podatki v ekologiji
- Uporaba rastrskih in vektorskih podatkov v prostorski analizi in ekološkem modeliranju
- Primeri uporabe prostorskih modelov v ekologiji
- Interpretacija in vizualizacija rezultatov prostorskega modeliranja

Content (Syllabus outline):

- Geographic information systems and geospatial datasets in ecology
- The use of raster and vector data in ecological spatial analysis and modeling
- Ecological modeling key studies
- Interpretation and visualization of geospatial modeling results

Temeljni literatura in viri / Readings:

- Bai, T., 2017: GIS technology applications in environmental and earth sciences. Taylor & Francis; CRC Press. (izbrana poglavja)
- Skidmore, A., 2002: Environmental Modelling with GIS and Remote Sensing (Geographic Information Systems Workshop), CRC Press. (izbrana poglavja)
- Goodchild, M.F., Case, T.J., 2014: Spatial Uncertainty in Ecology: Implications for Remote Sensing and GIS Applications. Springer-Verlag Ney York. (izbrana poglavja)
- Ciglič, R., Geršič, M., Perko, D., Zorn, M., 2016: GIS v Sloveniji 13: Digitalni podatki, Geografski inštitut Antona Melika ZRC SAZU. Ljubljana. (izbrana poglavja)
- Ivajnsič D., in sod. 2023. Primeri prostorskih analiz vplivov podnebnih sprememb: Monografija v okviru projekta Preprečevanje toplotnega stresa v urbanih sistemih v luči podnebnih sprememb (ARRS J7-1822). DOI: <https://doi.org/10.18690/um.fnm.8.2022>

Cilji in kompetence:

- Študentje pojasnijo tehnologijo GIS in povežejo le-to z statističnimi metodami.
- Študentje uporabijo rastrske in vektorske podatke z vidika prostorske analize in modeliranja v ekologiji.
- Študentje uporabijo različne prakse ekološkega modeliranja.
- Študentje predstavijo rezultate z različnimi tematskimi kartami in z modelom ustreznimi diagrami.

Objectives and competences:

- Students explain GIS technology and link it with statistical methods.
- Students use raster and vector data from the perspective of spatial analysis and modeling in ecology.
- Students use various ecological modeling practices.
- Students present results with different thematic maps and model relevant diagrams.

Predvideni študijski rezultati:**Znanje in razumevanje:**

- Študentje poiščejo in uporabljajo dostopne prostorske podatkovne baze
- Študentje uporabljajo GIS orodja za prostorsko analizo in modeliranje v ekologiji.

Prenesljive/ključne spretnosti in drugi atributi:

- Študentje uporabljajo različna GIS orodja in prostorske podatke za potrebe prostorske analize in modeliranja v ekologiji.

Metode poučevanja in učenja:**Intended learning outcomes:****Knowledge and understanding:**

- Students find and use accessible spatial databases
- Students use GIS tools for spatial analysis and modeling in ecology.

Transferable/Key Skills and other attributes:

- Students use different GIS tools and spatial data for the needs of spatial analysis and modeling in ecology.

Learning and teaching methods:

- Predavanja
- Seminar
- Laboratorijske vaje
- Individualno delo

- Lectures
- Seminar
- Laboratory work
- Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

- Seminarska naloga
- Pisni izpit

20%
80%

- Seminar
- Written exam

Reference nosilca / Lecturer's references:

- IVAJNŠIČ, Danijel, DEVETAK, Dušan. GIS-based modelling reveals the fate of antlion habitats in the Deliblato Sands. *Scientific reports*. 2020, vol. 10, art. no. 5299, str. 1-9. ISSN 2045-2322. DOI: [10.1038/s41598-020-62305-3](https://doi.org/10.1038/s41598-020-62305-3). [COBISS.SI-ID [16499971](https://www.cobiss.si/id/16499971)]
- KALIGARIČ, Mitja, ČUŠ, Jure, ŠKORNIK, Sonja, IVAJNŠIČ, Danijel. The failure of agri-environment measures to promote and conserve grassland biodiversity in Slovenia. *Land use policy*. [Print ed.]. 2019, 80, str. 127-134, ilustr. ISSN 0264-8377. DOI: [10.1016/j.landusepol.2018.10.013](https://doi.org/10.1016/j.landusepol.2018.10.013). [COBISS.SI-ID [24068872](https://www.cobiss.si/id/24068872)]
- IVAJNŠIČ, Danijel, KALIGARIČ, Mitja, FANTINATO, Edy, DEL VECCHIO, Silva, BUFFA, Gabriella. The fate of coastal habitats in the Venice Lagoon from the sea level rise perspective. *Applied geography*. [Print ed.]. 2018, vol. 98, str. 34-42, ilustr. ISSN 0143-6228. DOI: [10.1016/j.apgeog.2018.07.005](https://doi.org/10.1016/j.apgeog.2018.07.005). [COBISS.SI-ID [24006152](https://www.cobiss.si/id/24006152)]