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.; 1st or 2nd**	**1.- 4.; 1st-4th**
Doctoral Study Ecological Sciences, 3rd degree			

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

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

Vsebina:	**Content (Syllabus outline):**
• 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	• 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)
- Ivajnšič 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.

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.

Metode poučevanja in učenja:

Learning and teaching methods:

• Predavanje • Seminar • Laboratorijske vaje • Individualno delo	• Lectures • Seminar • Laboratory work • Individual work

Načini ocenjevanja:	Delež (v %) / 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. [COBISS.SI-ID 16499971]

- IVAJNŠIČ, Danijel, PIPENBAHER, Nataša, GRUJIĆ, Jaša Veno, DONŠA, Daša, KALIGARIČ, Mitja, ŠKORNIK, Sonja, ŽIBERNA, Igor, ČUŠ, Jure, RECKO NOVAK, Petra, KOHEK, Štefan, BRUMEN, Matej, STRNAD, Damjan. A decision support system for effective implementation of agro-environmental measures targeted at small woody landscape features : the case study of Slovenia. Landscape and urban planning. [Print ed.]. 2024, vol. 247, [article no.] 105064, 13 str., ilustr. ISSN 0169-2046. DOI: 10.1016/j.landurbplan.2024.105064. [COBISS.SI-ID 190421251]

- ŽIBERNA, Igor, PIPENBAHER, Nataša, DONŠA, Daša, ŠKORNIK, Sonja, KALIGARIČ, Mitja, KAJFEŽ-BOGATAJ, Lučka, ČREPINŠEK, Zalika, GRUJIĆ, Jaša Veno, IVAJNŠIČ, Danijel. The impact of climate change on urban thermal environment dynamics. *Atmosphere*. 2021, vol. 12, iss. 9, str. 1-15, ilustr. ISSN 2073-4433. https://www.mdpi.com/journal/atmosphere/special_issues/hazards_urbanization_climate, Repozitorij Univerze v Ljubljani – RUL, Digitalna knjižnica Univerze v Mariboru – DKUM, DOI: 10.3390/atmos12091159. [COBISS.SI-ID 75887619]