



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 /

Predavanja / Lectures:

slovenski / Slovene

Languages:

Vaje / Tutorial:

slovenski / Slovene

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

Pozitivno opravljena seminarska naloga je pogoj za pristop k izpitu.

Prerequisites:

Positively accomplished seminary work is a precondition to written exam accession.

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.
- Skidmore, A., 2002: Environmental Modelling with GIS and Remote Sensing (Geographic Information Systems Workshop), CRC Press.
- Goodchild, M.F., Case, T.J., 2014: Spatial Uncertainty in Ecology: Implications for Remote Sensing and GIS Applications. Springer-Verlag New York.
- Ciglič, R., Geršič, M., Perko, D., Zorn, M., 2016: GIS v Sloveniji 13: Digitalni podatki, Geografski inštitut Antona Melika ZRC SAZU. Ljubljana.

Cilji in kompetence:

- Študenti se seznanijo z tehnologijo GIS in povezavo le-teh z statističnimi metodami.
- Študenti prepoznajo in znajo uporabljati rastrske in vektorske podatke z vidika prostorske analize in modeliranja v ekologiji.
- Študenti se seznani z različnimi praksami ekološkega modeliranja.
- Študenti znajo dobljene rezultate predstaviti s različnimi tematskimi kartami in z modelom ustreznimi diagrami.

Objectives and competences:

- Students know the GIS technology and the connection to modern spatial statistical methods.
- Students are able to recognize and use raster and vector databases by developing spatial analysis-based ecological models.
- Students are able to develop several statistical geospatial models considering ecological issues.
- Students are able to present their geospatial results with thematic maps and corresponding graphs.

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

- Poznavanje GIS orodij in metodologije prostorskega modeliranja.

Prenesljive/ključne spretnosti in drugi atributi:

- Uporaba, analiza in sinteza dostopnih prostorskih podatkov.

Metode poučevanja in učenja:

- Predavanje
- Seminar
- Laboratorijske vaje
- Individualno delo

Intended learning outcomes:**Knowledge and understanding:**

- Knowledge about GIS technology and geospatial modelling techniques.

Transferable/Key Skills and other attributes:

- Use, analysis and synthesis of available geospatial data sets.

Learning and teaching methods:

- Lectures
- Seminar
- Laboratory work
- Individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
• Seminarska naloga • Pisni izpit	20% 80%	• Written exam

Reference nosilca / Lecturer's references:

- KALIGARIČ, Mitja, IVAJNŠIČ, Danijel. Vanishing landscape of the "classic" Karst : changed landscape identity and projections for the future. *Landscape and urban planning*, ISSN 0169-2046. [Print ed.], 2014, vol. 132, str. 148-158, ilustr., doi: [10.1016/j.landurbplan.2014.09.004](https://doi.org/10.1016/j.landurbplan.2014.09.004).
- IVAJNŠIČ, Danijel, KALIGARIČ, Mitja, ŽIBERNA, Igor. Geographically weighted regression of the urban heat island of a small city. *Applied geography*, ISSN 0143-6228. [Print ed.], 2014, vol. 53, str. 341-353, doi: [10.1016/j.apgeog.2014.07.001](https://doi.org/10.1016/j.apgeog.2014.07.001)
- IVAJNŠIČ, Danijel, LIPEJ, Lovrenc, ŠKORNIK, Iztok, KALIGARIČ, Mitja. The sea level rise impact on four seashore breeding birds: the key study of Sečovlje Salina Nature Park. *Climatic change*, ISSN 0165-0009, 2016, str. 1-14 [f], ilustr., doi: [10.1007/s10584-016-1854-3](https://doi.org/10.1007/s10584-016-1854-3).