



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	<b>Geo-informatika v biologiji in ekologiji</b>
<b>Course title:</b>	<b>Geoinformatics in biology and ecology</b>

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:**

- Nastanek, obdelava in uporaba prostorskih podatkov v biologiji in ekologiji
- Metode daljinskega zaznavanja
- Primeri uporabe satelitskih posnetkov (podob), orto-foto posnetkov in LIDAR podatkov v biologiji in ekologiji
- Transformacija, klasifikacija in uporaba podob za namene raziskav v biologiji in

**Content (Syllabus outline):**

- The development, processing and application of geospatial data in biology and ecology
- Remote sensing methods
- The use of satellite imagery, ortho-foto imagery and LIDAR data in biology and ecology
- Transformation, classification and application of remote sensed data for

ekologiji

research in biology and ecology

### Temeljni literatura in viri / Readings:

- Awange, J.L., Kyalo Kiema, J.B., 2013. Environmental Geoinformatics: Monitoring and Management. Springer-Verlag Berlin Heidelberg.
- Warner, T.A., Campagna, D.J., 2009. Remote sensing with IDRISI Tajga. Geocarto International Center, Hong Kong.
- Oštir, K., 2006: Daljinsko zaznavanje. Inštitut za antropološke in prostorske študije ZRC SAZ.
- 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 sezanijo z tehnologijo daljinskega zaznavanja v biologiji in ekologiji
- Študenti znajo uporabljati podatke daljinskega zaznavanja
- Študenti se seznanijo z različnimi praksami obdelave podatkov daljinskega zaznavanja
- Študenti poznajo uporabo in aplikativno vrednost rezultatov metod daljinskega zaznavanja v luči biologije in ekologije

### Objectives and competences:

- Students are informed about the modern remote sensing technology in biology and ecology
- Students are able to use remote sensing data
- Students are informed about different approaches of remote sensing data processing
- Student know the applicable value of remote sensing results from the perspective of biology and ecology

### Predvideni študijski rezultati:

#### Znanje in razumevanje:

- Poznavanje metod daljinskega zaznavanja v biologiji in ekologiji

Prenosljive/ključne spretnosti in drugi

### Intended learning outcomes:

#### Knowledge and understanding:

- Knowledge about remote sensing technology in biology and ecology

Transferable/Key Skills and other attributes:

<b>atributi:</b> - Pridobivanje, procesiranje in uporaba podatkov daljinskega zaznavanja	- Gaining, processing and use of remote sensed data
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**Metode poučevanja in učenja:**

**Learning and teaching methods:**

<ul style="list-style-type: none"> <li>• Predavanje</li> <li>• Seminar</li> <li>• Laboratorijske vaje</li> <li>• Individualno delo</li> </ul>	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Seminar</li> <li>• Laboratory work</li> <li>• Individual work</li> </ul>
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Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

<ul style="list-style-type: none"> <li>• Seminarska naloga</li> <li>• Pisni izpit</li> </ul>	<p>20%</p> <p>80%</p>	<ul style="list-style-type: none"> <li>• Written exam</li> </ul>
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**Reference nosilca / Lecturer's references:**

<ul style="list-style-type: none"> <li>• KALIGARIČ, Mitja, IVAJNŠIČ, Danijel. Habitat changes caused by sea level rise, driven by climate change in the Northern Adriatic coastal wetlands, Slovenia. V: RANNO, Swen (ur.), NEUBERT, Marco (ur.). <i>Managing protected areas in Central and Eastern Europe under climate change</i>, (Advances in global change research, ISSN 1574-0919, vol. 58). Dordrecht [etc.]: Springer, cop. 2014, str. 233-242.</li> <li>• IVAJNŠIČ, Danijel, KALIGARIČ, Mitja. How to preserve coastal wetlands, threatened by climate change-driven rises in sea level. <i>Environmental management</i>, ISSN 0364-152X, 2014, vol. 54, iss. 4, str. 671-684, ilustr., doi: <a href="https://doi.org/10.1007/s00267-014-0244-8">10.1007/s00267-014-0244-8</a>.</li> <li>• IVAJNŠIČ, Danijel, ŠAJNA, Nina, KALIGARIČ, Mitja. Primary succession on re-created coastal wetland leads to successful restoration of coastal halophyte vegetation. <i>Landscape and urban planning</i>, ISSN 0169-2046. [Print ed.], 2016, vol. 150, str. 79-86, ilustr., doi: <a href="https://doi.org/10.1016/j.landurbplan.2016.03.005">10.1016/j.landurbplan.2016.03.005</a>.</li> <li>• KRYŠTUFEK, Boris, ZORENKO, Tanya, ATANASOV, Nasko, BONTZORLOS, Vasileios, IVAJNŠIČ, Danijel. Ecological Niche Modelling yields insight into temporal range dynamics of the arvicoline rodent <i>Microtus hartingi</i> in Europe. <i>Hystrix, the Italian Journal of Mammology</i> (v recenziji), 2017.</li> <li>• IVAJNŠIČ, Danijel, KALIGARIČ, Mitja, FANTINATO, Edy, DEL VECCIO, Silvia, BUFFA, Gabriella. The fate of coastal habitats in the Venice Lagoon from the sea level rise perspective. <i>Applied Geography</i> (v recenziji), 2017.</li> </ul>
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