

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

Predmet:	OSNOVE PROSTORSKEGA MODELIRANJA
Course title:	BASICS OF SPATIAL MODELLING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
GOSPODARSKA IN TEHNIŠKA LOGISTIKA 1.stopnja		2.	3.
PROFESSIONAL HIGHER EDUCATION STUDY PROGRAMME ECONOMIC AND TECHNICAL LOGISTICS 1. degree			

Vrsta predmeta / Course type: OBVEZNI

Univerzitetna koda predmeta / University course code: VIS

Predavanja Lectures	Seminar Seminar	vaje Tutorial	Klinične vaje Laboratory work	Druge oblike študija Field work	Samost. delo Individ. work	ECTS
15 e-P 15 a-P		24 e-V 21 a-V			135	7

Nosilec predmeta / Lecturer: TOMAŽ KRAMBERGER

Jeziki / Predavanja / Lectures: SLOVENSKI / SLOVENE  
 Languages: Vaje / Tutorial: SLOVENSKI / SLOVENE

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

Prerequisites:

Ni pogojev

None

Vsebina:

Content (Syllabus outline):

- Osnove matematičnega modeliranja logističnih procesov.
- Osnove teorije grafov kot orodje za modeliranje.
- Algoritmi za optimizacijo logističnih modelov.
- Teoretično – metodološke osnove GIS-a.
- Aplikacija modelov in njihova optimizacija v GIS-u.

- Basics of mathematical modelling of logistics processes
- Basics of graph theory as a tool for modelling
- Algorithms for optimisation of logistics models
- Theoretic-methodological basics of GIS
- Model application and their optimisation in GIS

Temeljni literatura in viri / Readings:

1. Kvamme K., Oštir-Sedej, K., Stančič, Z., Šumrada, R., 1997. Geografski informacijski sistemi. Znanstvenoraziskovalni center Slovenske akademije znanosti in umetnosti Ljubljana, 19-21.
2. Wilson, R.J., Watkins, J.J., Graphs, An introductory approach, John Wiley, New York, 1990. (Slovene translation: Uvod v teorijo grafov, DMFA Ljubljana 1997.)
3. Understanding GIS: The ARC/INFO Method, Esri Press; Book & CD edition, 1999.

**Cilji in kompetence:**

- spoznajo osnove modeliranja logističnih procesov, izgradnjo modelov in njihovo optimizacijo,
- spoznajo osnovna matematična orodja za modeliranje in se naučijo izgraditi modeli enostavnih logističnih procesov,
- spoznajo osnove Geografskih informacijskih sistemov in njihovo uporabo v logistiki, naučijo se aplicirati izgrajene modeli v GIS-u.

**Objectives and competences:**

- Students are familiarized with the basics of modelling logistics processes and their optimization
- Students are familiarized with the basic mathematical tools for modelling and learn to create models for simple logistics processes
- Students learn about the basics of GIS and their use in logistics, they learn to apply their models to practical situations using GIS

**Predvideni študijski rezultati:**

**Študenti znajo:**

- Pojasniti vlogo in pomen GIS modeliranja v logistiki
- Opredeliti namen in osnove GIS-a
- Spoznajo osnove GIS-a
- Uporabiti osnovna orodja GIS-a za modeliranje osnovnih logističnih problemov.

**Intended learning outcomes:**

- Students learn:
- how to explain the role and importance of GIS
- modelling in logistics
- about the purpose and basics of GIS
- use the basic GIS tools for modelling basic logistics problems

**Metode poučevanja in učenja:**

**Predavanja:** pri predavanjih študent spozna teoretične vsebine predmeta. Del predavanj se izvaja na klasični način v predavalnici, del pa v obliki e-predavanj (e-predavanja se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

**Vaje:** pri vajah študent utrdi teoretično znanje in spozna aplikativne možnosti. Del vaj se izvaja na klasični način v predavalnici, del pa v obliki e-predavanj (e-vaje se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju).

**Learning and teaching methods:**

**Lectures:** students understand the theoretical frameworks of the course. Part of the lecture course is in a classroom while the rest is in the form of e-learning (e-lectures may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

**Tutorials:** Students enhance their theoretical knowledge and are able to apply it. Part of the seminar is in a classroom while the rest is in the form of e-learning (e-seminars may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment).

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

<ul style="list-style-type: none"> <li>▪ Pisni izpit</li> <li>▪ Ustni izpit</li> </ul>	<ul style="list-style-type: none"> <li>▪ 70%</li> <li>▪ 30%</li> </ul>	<ul style="list-style-type: none"> <li>▪ Written examination</li> <li>▪ Oral examination</li> </ul>
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Reference nosilca / Lecturer's references:

1. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. Priority constrained Chinese postman problem. *Logistics and sustainable transport*, 22-05-07, vol. 1, no 1, 15 str.  
[http://www.jlst.org/uploads/priority\\_constrained\\_chinese\\_postman\\_kramb.zer.pdf](http://www.jlst.org/uploads/priority_constrained_chinese_postman_kramb.zer.pdf).
2. KRAMBERGER, Tomaž, ROSI, Bojan. Do managers have enough quality information for decision-making. *Organizacija (Kranj)*, sep.-okt. 2007, letn. 40, št. 5, str. 207-217.
3. KRAMBERGER, Tomaž, ŽEROVNIK, Janez. A contribution to environmentally friendly winter road maintenance: : optimizing road de-icing. *Transp. res., Part D Transp. environ.* [Print ed.], July 2008, vol. 13, iss. 5, str. 340-346.  
<http://dx.doi.org/10.1016/j.trd.2008.03.007>, doi: [10.1016/j.trd.2008.03.007](https://doi.org/10.1016/j.trd.2008.03.007).
4. KRAMBERGER, Tomaž, ŠTRUBELJ, Gregor, ŽEROVNIK, Janez. Chinese postman problem with priority nodes. *Fund. Computing Decis. Sci.*, 2009, vol. 34, no. 4, str. 233-264.  
<http://fcds.cs.put.poznan.pl/FCDS2/ArticleDetails.aspx?articleId=218>.
5. FOŠNER, Maja, KRAMBERGER, Tomaž. Logistics as a part of leisure and tourism industry. V: 15th Annual Conference European Council for Business Education, May 28-30, 2010, Lausanne, Switzerland. *"Co-operation and competition - in the leisure and service industries" : proceedings of the 15th Annual Conference European Council for Business Education, May 28-30, 2010, Lausanne, Switzerland*, (ECBE proceedings of the Annual Conference, 2010). Lausanne: European Council for Business Education: = ECBE, 2010, str. 70-78.