UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Ime predmeta:	GEOGRAFSKI INFORMACIJSKI SISTEMI
Course title:	GEOGRAPHICAL INFORMATION SYSTEMS

Študijski program in stopnja Study programme and cycle	Študijska smer Study option	Letnik Year of study	Semester Semester
LOGISTIKA SISTEMOV 1. stopnja		2.	3.
SYSTEM LOGISTICS 1st degree		2.	3.

Vrsta predmeta (obvezni ali izbirni) /
Course type (compulsory or elective)

OBVEZNI
COMPULSORY

Univerzitetna koda predmeta / University course code:

UN

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
15 e-P 15 a-P		24 e-V 21 a-V			135	7

Nosilec predmeta / Course coordinator:

KLEMEN PRAH

Jeziki /Languages:

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites for enrolling in the course or for performing study obligations:**
Ni pogojev.	None.

Vsebina (kratek pregled učnega načrta):	**Content (syllabus outline):**
- GIS koncept. - Razvoj GIS-a skozi zgodovino. - Tehnike in tehnologije uporabljane v GIS-u. - Projekcije, koordinatni sistemi in kartografski datumi. - Uvod v ARC GIS. - Arc Map. - Arc Catalog. - Zajem prostorskih podatkov. - Shranjevanje prostorskih podatkov. - Analiza prostorskih podatkov. - Osnove izgradnje mrežne podatkovne baze. - Osnove mrežne analize. - Prikaz prostorskih podatkov. - Organizacija prostorskih podatkov. - Tehnologija GPS, Galileo, cestna navigacija. - Uporaba tehnologij GIS in GPS v logistiko.	- GIS concept. - History of GIS. - Techniques and technologies of GIS. - Projections, coordination systems and cartographic dates. - Introduction to ARC and GIS. - Arc Map. - Arc Catalog. - Spatial data collection. - Spatial data saving. - Spatial data analysis. - Basics of network dataset. - Basics of network analysis. - Spatial data presentation. - Organization of spatial data. - GPS technology, Galileo, road navigation. - GIS and GPS technologies in logistics.

Temeljni literatura in viri / Reading materials:

1. E-gradivo predmeta.
2. Heywood, I., Cornelius, S., Carver, S.,2011. An Introduction to Geographical Information Systems. Fourth edition. Pearson.
3. Longely, P.A., Goodchild, M.F., Maguire, D.J., Rhind, D.W.,2011. Geographic Information Systems & Science. Third edition. John Wiley & Sons.
4. Kvamme K., Oštir-Sedej, K., Stančič, Z., Šumrada, R., 1997. Geografski informacijski sistemi. Znanstvenoraziskovalni center Slovenske akademije znanosti in umetnosti Ljubljana, 19-21.
5. Wilson, R.J., Watkins, J.J., Graphs, An introductionary approach, John Wiley, New York, 1990. (Slovene translation: Uvod v teorijo grafov, DMFA Ljubljana 1997.)
6. Law, M., Collins, A. 2015. Getting to Know ArcGIS. Fourth edition. Esri.
7. Peterson, G.N., 2009. GIS Cartography, A Guide to Effective Map Design. CRC Press.
8. Bhatta, B., 2011. Global Navigation Satellite Systems, Insight into GPS, GLONASS, Galileo, Compass, and others. CRC Press.
9. Računalniški program / computer programme Esri ArcGIS z razširitvijo / with extension Network Analyst.

Cilji in kompetence:	**Objectives and competences:**
V okviru teoretičnih znanj bodo študenti:	In the context of theory will students:
▪ spoznali osnovne koncepte tehnolgije GIS,	▪ know the basic concepts of GIS technologies,
▪ pojasnili glavne značilnosti prostorskih podatkov,	▪ explain main characteristics of spatial data,
▪ navedli glavne vire prostorskih podatkov,	▪ list the main sources of spatial data,
▪ opisali strukturo prostorskih podatkov,	▪ describe a spatial data structure,
▪ spoznali osnove modeliranja logističnih procesov v GIS-u, izgradnjo modelov in njihovo analizo.	▪ know the basics of modeling logistics processes in GIS, model design and their analysis.
V okviru praktičnih znanj bodo študenti:	In the context of practical work will students:
▪ spoznali osnovna orodja programskega paketa Arc Gis,	▪ know basic tools of Arc Gis software,
▪ naučili se uporabiti osnovnih GIS orodij,	▪ learn to use basic GIS tools,
▪ naučili se osnovnih GIS analiz,	▪ perform basic GIS analysis,
▪ ustvarili transportno mrežno podatkovno bazo in izvedli osnovne mrežne analize.	▪ create network dataset and perform basic network analysis.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje	Knowledge and understanding
Študenti znajo:	Students know how to:
▪ opredeliti namen in osnove GIS-a,	▪ define the purpose and basics of GIS,
▪ pojasniti vlogo in pomen GIS modeliranja v logistiki,	▪ explain the role and importance of GIS modeling in logistics,
▪ uporabiti osnovna znanja GIS-a,	▪ use the basics of GIS,
▪ uporabiti osnovna orodja GIS za modeliranje osnovnih logističnih problemov.	▪ use the basic GIS tools for modelling the basic logistics problems.
Prenosljive/ključne spretnosti:	Transferable/Key Skills:
▪ Poznavanje prostorskih podatkovnih virov in njihova uporaba.	▪ Knowledge and efficient use of different spatial data sources.
▪ Usposobljenost za delo z GIS pri raziskovanju in v bodočem službenem okolju.	▪ Competence of using GIS in the field of researching and in future business environment.
	▪ Using GIS in personal lifelong learning.

▪ Uporaba GIS pri vseživljenjskem osebnostnem izpopolnjevanju.	

Metode poučevanja in učenja:

Learning and teaching methods:

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-vaj (e-vaje se lahko izvajajo na videokonferenčni način ali s pomočjo posebej v ta namen didaktično pripravljenih e-gradiv v virtualnem elektronskem učnem okolju). |

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-tutorials may be given via video-conferencing or with the help of specially designed e-material in a virtual electronic learning environment). |

Načini ocenjevanja: | Delež (v %) / Share (in %) | **Assessment methods:**

Načini ocenjevanja:	Share (in %)	Assessment methods:
▪ Opravljene obveznosti e-predavanj in e-vaj so pogoj za pristop k izpitu.		▪ Successful completion of e-lectures and e-tutorials is a prerequisite for entering the exam.
▪ Teoretični del izpita (pisno).	35%	▪ Theoretical examination (written).
▪ Praktični del izpita.	35%	▪ Practical examination.
▪ Seminarska naloga.	30%	▪ Seminar paper.
▪ Teoretični in praktični del izpita morata biti vsak posebej pozitivna.		▪ Theoretical and practical examination must be individually positive.

Reference nosilca / Course coordinator's references:

1. KRAMBERGER, Tomaž, DRAGAN, Dejan, PRAH, Klemen. A heuristic approach to reduce carbon dioxide emissions. Proceedings of the Institution of Civil Engineers - Transport, Okt. 2014, vol. 167, iss. 5, str. 296-305.
2. KRAMBERGER, Tomaž, ŽEROVNIK, Janez, ŠTRUBELJ, Gregor, PRAH, Klemen. GIS technology as an environment for testing an advanced mathematical model for optimization of road maintenance. Central European Journal of Operations Research, June 2013, vol. 21, issue 1-Supplement, str. 59-73.
3. DRAGAN, Dejan, KRAMBERGER, Tomaž, LISEC, Andrej, INTIHAR, Marko, PRAH, Klemen. Using GIS for the optimization of pupils transportation: the case of Laško municipality. Logistics & sustainable transport, 3. sept. 2011, vol. 2, no. 3, str. 35-51.
4. PRAH, Klemen, ŠTRUBELJ, Gregor, RUPNIK, Bojan, KRAMBERGER, Tomaž, DRAGAN, Dejan. GIS pri študiju in raziskovalnem delu v logistiki. V: CIGLIČ, Rok (ur.), et al. Digitalni podatki, (GIS v Sloveniji, ISSN 1855-4954, 13). 1. izd. Ljubljana: Založba ZRC. 2016, str. 209-221.
5. PRAH, Klemen. Studying port and urban functions in port-city of Koper with spatial analysis techniques and GIS tools. V: LOBA, Akou Don Franck Valéry (ur.), N'GUESSAN, Atsé Alexis B. (ur.). Le port dans la ville. [S. l.]: EMS. cop. 2017, str. 38-51.