

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Ime predmeta: PAMETNA IN VARNA MOBILNOST
Course title: SMART AND SAFE MOBILITY

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

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

OBVEZNI
COMPULSORY

Univerzitetna koda predmeta / University course code:

MAG

Predavanja Lectures	Seminar Seminar	Vaje Tutorial				Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
18 e-P 27 a-P		AV	EV	LV	RV			155	8
			15	25					

Nosilec predmeta / Course coordinator:

DARJA TOPOLŠEK

Jeziki /Languages:

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

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

Ni pogojev.

Prerequisites for enrolling in the course or for performing study obligations:

None.

Vsebina (kratek pregled učnega načrta):

- Pametna mesta (struktura, standardi, ekološki ter družbeni vplivi pametnega mesta).
- Mobilnost ljudi in blaga (tehnike in instrumenti za upravljanje mobilnosti, MaaS, MoD, načrti mobilnosti, načela celostnega načrtovanja)
- Pametna mobilnost ljudi in blaga v urbanih območjih in skupnostih (mobilnostni sistemi in nadzorni/informacijski centri, kolektivna mobilnost in skupna raba vozil, koncepti mestne/urbane distribucijske logistike in konsolidacijski centri, blagovni tokovi).
- ITS v navezavi s sistemi za omejevanje vstopa v urbana središča (okoljske cone/scheme, nadzor in regulacija parkiranja, ITS v javnem prevozu, interoperabilnost, RFID in NFC tehnologije).
- Prometna varnost v okviru pametne mobilnosti.

Content (syllabus outline):

- Smart cities (structure, standards, ecological and social impacts of a smart city).
- Mobility of people and goods (mobility management techniques and instruments, MaaS, MoD, mobility plans, principles of integrated planning).
- Smart mobility of people and goods in urban areas and communities (mobility systems and control/information centers, collective mobility and vehicle sharing, city/urban distribution logistics concepts and consolidation centers, commodity flows).
- ITS in conjunction with systems for restricting access to urban centers (environmental zones/schemes, parking control and regulation, ITS in public transport, interoperability, RFID and NFC technologies).

- Traffic safety in the context of smart mobility.

Temeljni literatura in viri / Reading materials:

Topolšek, D., Cvahte Ojsteršek, T. Pametna in varna mobilnost, e-gradivo (v pripravi).
 Topolšek, D., Cvahte Ojsteršek, T. (2016). Mestna logistika in mobilistika: e-gradivo. Celje: Fakulteta za logistiko, <http://estudij.um.si/>.
 Anthopoulos, L. G. (2019). Smart city emergence: cases from round the world. Elsevier. <https://www.elsevier.com/books/smart-city-emergence/anthopoulos/978-0-12-816169-2>.
 European Environment Agency (2016). Towards clean and smart mobility : transport and environment in Europe. Luxembourg: Publications Office of the European Union.
 Faulin, J., Grasma, S. E., Hircsh, P. (2019). Sustainable Transportation and Smart Logistics: Decision-Making Models and Solutions. Elsevier.
 Flügge, B. (2017). Smart mobility - connecting everyone: trends, concepts and best practices. Wiesbaden : Springer Vieweg.
 Hatzelhoff, L., Kolar-Thompson,L. (2012) Smart city in practice: converting innovative ideas into reality : evaluation of the T-City Friedrichshafen.

Cilji in kompetence:

- Cilji predmeta so:
- opredeliti značilnosti mobilnosti ljudi in blaga
 - teoretično opredeliti in praktično razložiti strukturo, standarde in vplive pametnega mesta,
 - teoretično opredeliti pametno mobilnost ljudi in blaga v urbanih okoljih in to prenesti na primere iz prakse,
 - opredeliti ITS sisteme za omejevanje dostopa in njihov praktični prenos na realne probleme,
 - teoretično opredeliti prometno varnost v pametni mobilnosti in praktično razložiti vpliv varnosti na mobilnost,
 - praktično razložiti pristop k reševanju problematike pametne in varne mobilnosti ljudi in blaga.

Kompetence, ki jih pridobijo študenti:

- spoznajo in razumejo sistem in elemente pametne in varne mobilnosti ljudi in blaga,
- spoznajo in razumejo ITS sisteme za omejevanje vstopa v urbana središča,
- spoznajo in razumejo vpliv prometne varnosti na mobilnost ljudi/blaga,
- se usposobijo za analiziranje, kritično ovrednotenje in za snovanje posameznih elementov pametne mobilnosti ljudi/blaga,
- se usposobijo za prenos teoretičnega znanja na praktične probleme.

Objectives and competences:

- The objectives of the course are to:
- identify the characteristics of mobility of people and goods,
 - theoretically define and practically explain the structure, standards and impacts of a smart city,
 - theoretically define smart mobility of people and goods in urban environments and transfer this to practical examples,
 - identify ITS systems for access restrictions and their practical transfer to real problems,
 - theoretically define road safety in smart mobility and practically explain the impact of safety on mobility,
 - practically explain the approach to solving the problems of smart and safe mobility of people and goods.

Competences acquired by students:

- get to know and understand the system and elements of smart and safe mobility of people and goods,
- get to know and understand ITS systems for restricting access to urban centers,
- get to know and understand the impact of road safety on the mobility of people/goods,
- are trained to analyze, critically evaluate and design individual elements of smart mobility of people/goods,
- are trained to transfer theoretical knowledge to practical problems.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:
Študent bo ob zaključku predmeta zmožen:

- razumeti pomen urejenega mobilnostnega sistema v logističnem sistemu,
- razumeti in opredeliti elemente pametnega mesta in mobilnostnega sistema znotraj njih,
- evalvirati pomen prometno varnostnega vidika v logističnem sistemu,
- organizirati premik ljudi/blaga znotraj pametnih urbanih središč,
- zbrati podatke o posameznem elementu pametne in varne mobilnosti ljudi/blaga, jih potem analizirati in ovrednotiti, ter odločiti o predlogih

Knowledge and understanding:
After completion of the course, the student will be able to:

- understand the importance of an established mobility system in the logistics system,
- understand and define the elements of a smart city and the mobility system within it,
- evaluate the importance of the traffic safety aspect in the logistics system,
- organize the movement of people/goods within smart urban centers,
- collect data on individual elements of smart and safe mobility of people/goods, then analyze and evaluate them, and decide on proposals.

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. Praktične strokovne ekskurzije v podjetja in druga okolja. 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).

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. Practical professional excursions to companies and other relevant environments. Part of the tutorials 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:

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.
Pisni izpit.	60 %	Written examination.
Raziskovalna naloga.	20 %	Project work.
Ocene sprotnih aktivnosti pri predavanjih in e-predavanjih.	10 %	Grades from activities at lectures and e-lectures.
Ocene sprotnih aktivnosti pri vajah in e-vajah.	10 %	Grades from activities at tutorials and e-tutorials.

Reference nosilca / Course coordinator's references:

- TOPOLŠEK, Darja, BABIĆ, Dario, BABIĆ, Darko, CVAHTE OJSTERŠEK, Tina. Factors influencing the purchase intention of autonomous cars. Sustainability. 2020, vol. 12, iss. 24, str. [1]-16, ilustr. ISSN 2071-1050. <https://doi.org/10.3390/su122410303>. [COBISS.SI-ID 42536963].
- CVAHTE OJSTERŠEK, Tina, TOPOLŠEK, Darja. Influence of drivers' visual and cognitive attention on their perception of changes in the traffic environment. European transport research review. [Online ed.]. 2019,

vol. 11, no. 45, str. 1-9, ilustr. ISSN 1866-8887. <https://doi.org/10.1186/s12544-019-0384-2>, DOI: 10.1186/s12544-019-0384-2. [COBISS.SI-ID 513043773].

- KRAMAR, Uroš, DRAGAN, Dejan, TOPOLŠEK, Darja. The holistic approach to urban mobility planning with a modified focus group, SWOT, and fuzzy analytical hierarchical process. *Sustainability*. 2019, vol. 11, iss. 23, str. [1]-29, ilustr. ISSN 2071-1050. <https://doi.org/10.3390/su11236599>, DOI: 10.3390/su11236599. [COBISS.SI-ID 513044029].
- KRAMAR, Uroš, CVAHTE OJSTERŠEK, Tina, STERNAD, Marjan, TOPOLŠEK, Darja, et al. Designing a strategic mobility plan for small and medium sized cities using a multi-stage methodology : case of Celje. *Spatium : urban and spatial planning, architecture, housing, building, geodesia, environment*. 2015, iss. 33, str. 47-54. ISSN 1450-569X. [COBISS.SI-ID 512685885].
- MRNJAVAC, Edna, KOVAČIĆ, Nataša, TOPOLŠEK, Darja. The logistic product of bicycle destination. *Tourism and hospitality management*. 2014, vol. 20, no. 2, str. 171-184. ISSN 1330-7533. [COBISS.SI-ID 512612669]
- GAJSKI, Ines, TOPOLŠEK, Darja, CVAHTE OJSTERŠEK, Tina, STERNAD, Marjan. Implementing transport strategies based on sustainable mobility in the County of Varaždin. *Tehnički glasnik*. 2017, vol. 11, no. 4, str. 221-229, ilustr. ISSN 1846-6168. https://www.unin.hr/wp-content/uploads/tehnicki_glasnik_4_2017.pdf. [COBISS.SI-ID 512888125].
- CVAHTE OJSTERŠEK, Tina, TOPOLŠEK, Darja. Scientific literature and EU perspectives on urban consolidation centres. *Suvremeni promet*. 2015, vol. 35, no. 5/6, str. 357-359, tabele. ISSN 0351-1898. [COBISS.SI-ID 512698173].