

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Ime predmeta:</b>	INTELIGENTNI LOGISTIČNI SISTEMI
<b>Course title:</b>	INTELLIGENT LOGISTICS SYSTEMS

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

<b>Vrsta predmeta (obvezni ali izbirni) / Course type (compulsory or elective)</b>	IZBIRNI
	ELECTIVE

<b>Univerzitetna koda predmeta / University course code:</b>	DR
--	----

Predavanja Lectures	Seminar Seminar	Vaje Tutorial			Klinične vaje Clinical training	Druge oblike študija Other forms of study	Samost. delo Individual work	ECTS
20		AV	LV	RV			160	6

<b>Nosilec predmeta / Course coordinator:</b>	ROMAN GUMZEJ
---	--------------

<b>Jeziki /Languages:</b>	<b>Predavanja / Lectures:</b>	SLOVENSKI/SLOVENE
	<b>Vaje / Tutorial:</b>	SLOVENSKI/SLOVENE

<b>Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:</b>	<b>Prerequisites for enrolling in the course or for performing study obligations:</b>
Ni posebnih pogojev.	None in particular.

<b>Vsebina (kratek pregled učnega načrta):</b>	<b>Content (syllabus outline):</b>
<ol style="list-style-type: none"> <li>Logistični izzivi inovacijske družbe: kiber-fizikalni sistemi (CPS), pametne naprave in storitve, razširjena resničnost (XR), internet stvari (IoT), fizikalni internet (PhI), inteligentni logistični sistemi (ILS).</li> <li>Kakovost storitve (QoS) po načrtu: OPC UA, PhI OSI sklad, integrirana logistična podpora v ILS.</li> <li>Digitalni laboratoriji: digitalizacija, baze znanja, simulacije (DES, SD, ABS, NS), več-nivojsko, intra- in inter-organizacijsko odločanje.</li> </ol>	<ol style="list-style-type: none"> <li>Logistic challenges of the Innovation Society: cyber-physical systems (CPS), smart devices and services, eXtended Reality (XR), Internet of Things (IoT), Physical Internet (PhI), Intelligent Logistics Systems (ILS).</li> <li>Service quality (QoS) by design: OPC UA, PhI OSI stack, integrated logistics support in ILS.</li> <li>Digital labs: digitization, knowledge bases, simulations (DES, SD, ABS, NS), multi-level, intra- and inter-organizational decision making.</li> </ol>

<b>Temeljni literatura in viri / Reading materials:</b>
Gumzej, R. (2021). Intelligent logistics systems for smart cities and communities / R. Gumzej. - Cham : Springer, cop. 2021. - XVII, 204 str. : ilustr. ; 25 cm. - (Lecture notes in intelligent transportation and infrastructure, ISSN 2523-3440, ISSN 2523-3459). ISBN 978-3-030-81202-7 (hbk) - ISBN 978-3-030-81203-4 (ebook)

Gumzej, R. (2016). Engineering safe and secure cyber-physical systems : the specification PEARL approach / R. Gumzej - [S. l.] : Springer, cop. 2016. - XIII, 128 str. : ilustr. ; 23 cm. - (Studies in computational intelligence ; vol. 632). ISBN 978-3-319-28903-8 (hbk.)

Gumzej, R. (2010). Real-time systems' quality of service : introducing quality of service considerations in the life-cycle of real-time systems / R. Gumzej, Wolfgang A. Halang. - London [etc.] : Springer, 2010 - XIX, 131 str. : ilustr. ; 25 cm. - ISBN 978-1-84882-847-6 (hbk.) - ISBN 1-84882-847-0 - ISBN 1-84882-848-9 - ISBN 978-1-84882-848-3 (ebook)

Digitalna knjižnica, E-baze podatkov UM, <https://fl.um.si/knjiznica/digitalna-knjiznica/e-beze-podatkov-um/>. Gumzej, R.; Rakovska, M. (2020). Simulation modeling and analysis for sustainable supply chains. In: Grzybowska, K. (ed.), Awasthi, A. (ed.), Sawhney, R. (ed.). Sustainable logistics and production in industry 4.0: new opportunities and challenges. [S. l.]: Springer Nature, 2020, pp. 145-160. Ecoproduction. ISBN 978-3-030-33369-0. ISSN 2193-4614. DOI: 10.1007/978-3-030-33369-0\_9.

### Cilji in kompetence:

Cilji predmeta so:

- integracija obstoječih in novih znanj o informatiki v logistiki inovacijske družbe.

Kompetence, ki jih študenti osvojijo:

- analize kakovosti storitve logističnih sistemov in procesov,
- sinteze inteligentnih logističnih sistemov in rešitev.

### Objectives and competences:

Course objectives are:

- integration of existing and new knowledge on Innovation society's logistics informatics.

Competences acquired by students:

- service quality analysis of logistics systems and processes,
- synthesis of intelligent logistics systems and solutions.

### Predvideni študijski rezultati:

Študent bo po zaključku predmeta zmožen:

- izdelave znanstvenega ali strokovnega članka na osnovi individualnega raziskovalnega dela v okviru predmeta.

### Intended learning outcomes:

Upon completion of the course a student will be capable of:

- creating a scientific or professional article based on individual research work in the framework of the subject.

### Metode poučevanja in učenja:

Predavanja: v obliki konzultacij predstavljajo osnovo za individualno raziskovalno delo. Na konzultacijah študenti razširijo svoje znanje s teoretičnimi osnovami predmeta. Konzultacije potekajo v živo v manjših skupinah pa tudi v obliki e-predavanj na videokonferenčni način ter preko namenskih e-učilnic v e-učnem okolju.

### Learning and teaching methods:

Lectures: in the form of consultations represent the foundation of individual research work. During consultations students extend their knowledge with the theoretical fundamentals of the course. Consultations take place live in smaller groups as well as in the form of e-lectures via videoconferencing and dedicated e-classrooms in the e-learning environment.

### Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):

- znanstveni/strokovni članek

Delež (v %) /

Share (in %)

100%

### Assessment methods:

Method (written or oral exam, coursework, project):

- scientific/professional article

#### Reference nosilca / Course coordinator's references:

1. GUMZEJ, Roman. *Intelligent logistics systems for smart cities and communities, (Lecture notes in intelligent transportation and infrastructure)*. Cham: Springer, cop. 2021. XVII, 204 str., ilustr. ISBN 978-3-030-81202-7. ISBN 978-3-030-81203-4. <https://doi.org/10.1007/978-3-030-81203-4>, doi: 10.1007/978-3-030-81203-4. [COBISS.SI-ID 81555203]  
kategorija: 2A (Z, A'', A', A1/2); tip dela še ni verificiran  
točke: 160, št. avtorjev: 1
2. HALANG, Wolfgang A., GUMZEJ, Roman. *Schnelles Be- und Entladen von Passagierflugzeugen : Patentschrift DE 102016004717 (B4)*, 2018-10-11. München: Deutsches Patent- und Markenamt, **2018**. 8 str., ilustr. <https://register.dpma.de/DPMAREGISTER/pat/register?AKZ=1020160047178>. [COBISS.SI-ID 512928573]  
patentna družina: P201500136, 2015-06-02; DE 102016004717 (A1) 2016-12-08; SI 25013 (A) 2016-12-30  
kategorija: 2E (Z, A1/2); tip dela je verificiral OSICT
3. GUMZEJ, Roman, RAKOVSKA, Miroslava. *Simulation modeling and analysis for sustainable supply chains*. V: GRZYBOWSKA, Katarzyna (ur.), AWASTHI, Anjali (ur.), SAWHNEY, Rapinder (ur.). *Sustainable logistics and production in industry 4.0 : new opportunities and challenges, (Ecoproduction, ISSN 2193-4614)*. [S. l.]: Springer Nature. cop. **2020**, str. 145-160, ilustr. [https://doi.org/10.1007/978-3-030-33369-0\\_9](https://doi.org/10.1007/978-3-030-33369-0_9), doi: 10.1007/978-3-030-33369-0\_9. [COBISS.SI-ID 513050429]  
kategorija: 3B (Z, A1/2); tip dela je verificiral OSICD  
točke: 20, št. avtorjev: 2