

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
<b>Predmet:</b>		Brezžična in mobilna omrežja				
<b>Course title:</b>		Mobile and wireless networks				
<b>Študijski program in stopnja</b> Study programme and level		<b>Študijska smer</b> Study field		<b>Letnik</b> Academic year	<b>Semester</b> Semester	
Interdisciplinarni univerzitetni študijski program Računalništvo in matematika		ni smeri		3	drugi	
Interdisciplinary first cycle academic study programme Computer Science and Mathematics		none		3	second	
<b>Vrsta predmeta / Course type</b>				izbirni / elective		
<b>Univerzitetna koda predmeta / University course code:</b>				63259		
<b>Predavanja</b> Lectures	<b>Seminar</b> Seminar	<b>Vaje</b> Tutorial	<b>Klinične vaje</b> work	<b>Druge oblike študija</b>	<b>Samost. delo</b> Individ. work	<b>ECTS</b>
45	10	20			105	6
<b>Nosilec predmeta / Lecturer:</b>				prof. dr. Nikolaj Zimic		
<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:</b>		
Vpis v letnik študija.				Enrolment in the programme.		
<b>Vsebina:</b>				<b>Content (Syllabus outline):</b>		

<p>predavanja:</p> <p>Uvod v brezžična omrežja</p> <p>Fizični nivo</p> <p>Lokalna in osebna omrežja</p> <p>Mestna in prostrana omrežja</p> <p>Brezžični internet</p> <p>Ad Hoc brezžična omrežja</p> <p>Transportni nivo in varnost</p> <p>Kvaliteta storitev</p> <p>Hibridna brezžična omrežja</p>	<p>lectures:</p> <p>Introduction to wireless networks</p> <p>Physical layer review</p> <p>Local and personal wireless networks</p> <p>Metropolitan and wide area wireless networks</p> <p>Wireless internet</p> <p>Ad Hoc wireless networks</p> <p>Transport layer and security protocols</p> <p>Quality of service</p> <p>Hybrid wireless networks</p>
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#### **Temeljni literatura in viri / Readings:**

Sauter, Martin, "Communication systems for the mobile information society", Chichester : J. Wiley & Sons, cop. 2006, ISBN: 0-470-02676-6

C. Siva Ram Murthy and B. S. Manoj, "Ad-Hoc Wireless Networks: Architectures and Protocols," Prentice-Hall, 2004, ISBN: 0-13-147023-X.

Bernhard H. Walke, Stefan Mangold, Lars Berlemann, IEEE 802 Wireless Systems: Protocols, Multi-Hop Mesh/Relaying, Performance and Spectrum Coexistence, John Wiley & Sons, 12. jan. 2007, ISBN-13: 978-0470014394

Erik Dahlman, 3G Evolution: HSPA and LTE for Mobile Broadband, Academic Press, 2008, ISBN-13: 978-0123745385

Dodatna literatura:

Farid Dowla (Ed), " Handbook of RF and Wireless Technologies," Elsevier, 2003, ISBN: 0750676957.

Andreas Molisch, "Wireless Communications," Wiley, 2005, 668 pp., ISBN: 047084888X.

Benny Bing (Ed), "Emerging Technologies in Wirless LANs," Cambridge Univ Press, 2008, ISBN:

0521895842.

**Cilji in kompetence:**

Cilj predmeta je študentom računalništva in informatike predstaviti brezžična in mobilna omrežja. Poudarek je na posebnostih, ki jih prinaša brezžičen prenos podatkov in mobilnost terminalov v računalniška omrežja.

**Objectives and competences:**

The purpose of the course is to give the students a sound understanding of the architecture and operating principles of mobile and wireless networks. This course provides a general introduction to mobile networking, with an emphasis on the wireless data transmission and mobility of terminals.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

Študent spozna in razume osnovne in najpogostejše uporabljane metode umetne inteligence.

Uporaba:

Študent je zmožen uporabiti metode umetne inteligence pri načrtovanju in izvedbi konkretnih računalniških aplikacij na širokem področju uporabe.

Refleksija:

Študent je zmožen presoditi o implikacijah tehničnih dosežkov umetne inteligence na možnosti in omejitve pri uporabi računalnikov, meje računalniške inteligence, podobnosti in razlike z naravno inteligenco ter nekaterimi vprašanji področja kognitivne znanosti.

**Intended learning outcomes:**

Knowledge and understanding:

Understanding of the basic wireless networks concepts. Understanding of the various wireless networks differences and its applications.

Application:

Wireless and mobile networks applications in various working conditions (industrial, house, personal networks ...)

Reflection:

Comprehension and understanding wireless data transmission theory and its application in real world application from the field.

Transferable skills:

Solving of the similar problems from field of the computer communications.

Prenosljive spretnosti - niso vezane le na en predmet:

**Metode poučevanja in učenja:**

Predavanja, laboratorijske vaje.

**Learning and teaching methods:**

Lectures, lab practice.

**Načini ocenjevanja:**

Delež (v %) /

Weight (in %)

**Assessment:**

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

Sprotno preverjanje (domače naloge, kolokviji in projektno delo)

Končno preverjanje (pisni in ustni izpit)

Ocene: 6-10 pozitivno, 1-5 negativno

(v skladu s Statutom UL)

50%

50%

Type (written and oral exam, coursework, project):

Continuing (homework, project work)

Final (written and oral exam)

Grading: 6-10 pass, 1-5 fail.

**Reference nosilca / Lecturer's references:**

PEČAR, Primož, RAMŠAK, Anton, ZIMIC, Nikolaj, MRAZ, Miha, LEBAR BAJEC, Iztok. Adiabatic pipelining : a key to ternary computing with quantum dots. Nanotechnology, ISSN 0957-4484, 2008, vol. 19, no. 49, str. 1-12, ilustr. [COBISS.SI-ID 6790228]

LEBAR BAJEC, Iztok, ZIMIC, Nikolaj, MRAZ, Miha. The computational beauty of flocking : boids revisited. Mathematical and computer modelling of dynamical systems, ISSN 1387-3954, Aug. 2007, vol. 13, no. 4, str. [331]-347, ilustr. [COBISS.SI-ID 6020948]

ZIMIC, Nikolaj, MRAZ, Miha. Decomposition of a complex fuzzy controller for the truck-and-trailer reverse parking problem. Mathematical and computer modelling, ISSN 0895-7177. [Print ed.], Mar. 2006, vol. 43, no. 5/6, str. 632-645, ilustr. [COBISS.SI-ID 5195860]

LEBAR BAJEC, Iztok, ZIMIC, Nikolaj, MRAZ, Miha. Towards the bottom-up concept : extended quantum-dot cellular automata. Microelectronic engineering, ISSN 0167-9317. [Print ed.], 2006,

vol. 83, no. 4/9, str. 1826-1829, ilustr. [COBISS.SI-ID 5212244]

LEBAR BAJEC, Iztok, ZIMIC, Nikolaj, MRAZ, Miha. The ternary quantum-dot cell and ternary logic. Nanotechnology, ISSN 0957-4484, 2006, vol. 17, no. 8, str. 1937-1942, ilustr. [COBISS.SI-ID 5201748]