UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2017/18)			
Predmet:	Brezžična in mobilna omrežja		
Course title:	Mobile and wireless networks		

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **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

Vrsta predmeta / Course type	izbirni / elective
Univerzitetna koda predmeta / University course code:	63259

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Druge oblike študija**	**Samost. delo** **Individ. work**	**ECTS**
45	**10**	**20**			**105**	**6**

Nosilec predmeta / Lecturer:	prof. dr. Nikolaj Zimic

Jeziki / Languages:	**Predavanja / Lectures:**	slovenski / Slovene
	Vaje / Tutorial:	slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Vpis v letnik študija.	Enrolment in the programme.
Vsebina:	**Content (Syllabus outline):**

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

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:	Objectives and competences:
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.	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:	Intended learning outcomes:
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.	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:	**Learning and teaching methods:**
Predavanja, laboratorijske vaje.	Lectures, lab practice.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (written and oral exam, coursework, project):
Sprotno preverjanje (domače naloge, kolokviji in projektno delo)	50%	Continuing (homework, project work)
Končno preverjanje (pisni in ustni izpit)	50%	Final (written and oral exam)
Ocene: 6-10 pozitivno, 1-5 negativno		Grading: 6-10 pass, 1-5 fail.
(v skladu s Statutom UL)		

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]