

UČNI NAČRT PREDMETA / COURSE SYLLABUS (leto / year 2016/17)						
Predmet:		Računalniški sistemi				
Course title:		Computer systems				
Študijski program in stopnja Study programme and level		Študijska smer Study field		Letnik Academic year	Semester Semester	
Interdisciplinarni magistrski študijski program Računalništvo in matematika		ni smeri		1 ali 2	drugi	
Interdisciplinary Master's study programme Computer Science and Mathematics		none		1 or 2	second	
Vrsta predmeta / Course type				izbirni / elective		
Univerzitetna koda predmeta / University course code:				63509		
Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		30			105	6
Nosilec predmeta / Lecturer:		prof. dr. Branko Šter				
Jeziki / Languages:		Predavanja / Lectures: slovenski / Slovene, angleški / English				
		Vaje / Tutorial: slovenski / Slovene, angleški / English				
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Vpis v letnik študija.				Enrolment in the programme.		
Vsebina:				Content (Syllabus outline):		

<p>Električne linije: elektromagnetno valovanje, linijske enačbe, odboji, presluhi.</p> <p>Vzporedni in zaporedni vmesnik. UART. Standardi RS-232, RS-422 in RS-485.</p> <p>Vhodne naprave: tipkovnica, miška, skenerji.</p> <p>Izhodne naprave: video adapter, monitor, zvočne kartice, zvočniki, slušalke.</p> <p>Trdi diski, vmesniki za trde diske: IDE, ATA, SATA in SCSI.</p> <p>SSD diski. Flash pomnilniki.</p> <p>CD, DVD, Blu-ray. Zapisovalniki.</p> <p>Magnetni trakovi.</p> <p>PCI in PCI Express.</p> <p>Standard USB.</p> <p>Omrežni vmesniki. Standarda Ethernet in Wi-Fi.</p> <p>Gonilniki naprav: znakovni in bločni.</p> <p>USB gonilniki.</p> <p>Omrežni gonilniki.</p>	<p>Electrical transmission lines: electromagnetic waves, line equations, reflections, crosstalk.</p> <p>Parallel and serial interface. UART. Standards RS-232, RS-422 and RS-485.</p> <p>Input devices: keyboard, mouse, scanners.</p> <p>Output devices: video adapter, display, sound cards, speakers, headphones.</p> <p>Hard disks, hard disk interfaces: IDE, ATA, SATA and SCSI.</p> <p>SSD disks. Flash memories.</p> <p>CD, DVD, Blu-ray. Writers.</p> <p>Magnetic tapes.</p> <p>PCI and PCI Express.</p> <p>USB standard.</p> <p>Network interfaces. Ethernet and Wi-Fi standards.</p> <p>Device drivers: character and block drivers.</p> <p>USB drivers.</p> <p>Network drivers.</p>
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Temeljni literatura in viri / Readings:

D. A. Patterson, J. L. Hennesy: Computer Organization and Design, Morgan Kaufmann, 2005.

D. Kodek: Arhitektura in organizacija računalniških sistemov, Bi-Tim, 2008.

W. L. Rosch: Hardware Bible, Que, 2003.

J. Corbet, A. Rubini, G. Kroah-Hartman: Linux Device Drivers, O'Reilly, 2005.

Cilji in kompetence:

Cilj predmeta je študentom, ki so končali 1. stopnjo univerzitetnega študija, predstaviti nekatere koncepte iz področja računalniških sistemov, ki jih na 1. stopnji niso poslušali. Gre predvsem za vhodno-izhodne oz. periferne naprave. Študent naj bi znanje, ki ga je pridobil o računalniški arhitekturi in organizaciji, dopolnil še z znanjem o lastnostih in delovanju vhodno-izhodnih naprav.

Objectives and competences:

The course aims to present some topics in the field of computer systems to students who have completed the first level, but had not covered these topics. It is primarily about input/output or peripheral devices. Students are supposed to supplement the knowledge obtained about computer architecture and organization with the knowledge about features and working of input/output devices.

Predvideni študijski rezultati:

Znanje in razumevanje: Poznavanje in razumevanje temeljnih konceptov arhitekture računalniških sistemov in perifernih naprav je temeljnega pomena za vsakega inženirja računalništva in informatike.

Uporaba: Preko perifernih naprav človek komunicira z računalnikom. Neposredna uporaba pri načrtovanju računalniških sistemov, kakor tudi pri administraciji in vzdrževanju le-teh. Posredno pa tudi pri načrtovanju in programiranju systemske in uporabniške programske opreme.

Refleksija: Na podlagi temeljnih znanj in primerov iz prakse se pridobi predvsem sposobnost razumevanja in uporabe, delno pa tudi vrednotenja, analize in načrtovanja računalniških sistemov.

Prenosljive spretnosti - niso vezane le na en

predmet: Pridobljena znanja omogočajo boljše razumevanje zgradbe in delovanja računalniških sistemov. Praktični pristop pri reševanju konkretnih problemov pa nudi nadgradnjo temeljnih znanj in povezovanje problematik na

Intended learning outcomes:

Knowledge and understanding: Knowledge and understanding of basic concepts of computer systems architecture and peripheral devices is of vital importance to every computer engineer. Application: Through peripheral devices people communicate with computers. Direct application in designing computer systems, as well as in their administration and maintenance. Indirectly also in design and programming of systems and application software. Reflection: On the basis of basic knowledge and practical cases students acquire mainly the ability of understanding and applying, and partly also of evaluation, analysis and designing of computer systems. Transferable skills: Acquired knowledge enables a better understanding of architecture and workings of computer systems. The practical approach in solving specific problems provides an upgrade of basic knowledge and connection with related disciplines.

sorodnih področjih.

Metode poučevanja in učenja:

Predavanja, računske vaje, laboratorijske vaje, delo doma.

Learning and teaching methods:

Lectures, calculation exercises, laboratory exercises, home work.

Načini ocenjevanja:

Delež (v %) /

Weight (in %)

Assessment:

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

Sprotno preverjanje (domače naloge, kolokviji in projektno ali seminarsko delo)

Končno preverjanje (pisni in ustni izpit)

Ocene: 6-10 pozitivno, 1-5 negativno

(v skladu s Statutom UL)

50%

50%

Type (examination, oral, coursework, project): Continuing (homework, midterm exams, project work or seminar paper)
Final (written and oral exam)
Grading: 6-10 pass, 1-5 fail (according to the rules of University of Ljubljana)

Reference nosilca / Lecturer's references:

ŠTER, Branko, DOBNIKAR, Andrej. Adaptive radial basis decomposition by learning vector quantization. Neural processing letters, ISSN 1370-4621. [Print ed.], 2003, vol. 18, no. 1, str. 17-27, ilustr. [COBISS.SI-ID 3971668]

ŠTER, Branko. An integrated learning approach to environment modelling in mobile robot navigation. Neurocomputing, ISSN 0925-2312. [Print ed.], 2004, vol. 57, str. [215]-238, ilustr. [COBISS.SI-ID 4318548]

ŠTER, Branko, DOBNIKAR, Andrej. Modelling the environment of a mobile robot with the embedded flow state machine. Journal of intelligent & robotic systems, ISSN 0921-0296, Jun. 2006, vol. 46, no. 2, str. [182]-199, ilustr. [COBISS.SI-ID 5492820]

ŠTER, Branko, ŠUŠTERIČ, Zoran, LOTRIČ, Uroš. Combined application of theoretical modeling and neural networks in vulcametry. Kautschuk-Gummi-Kunststoffe, ISSN 0948-3276, 2009, jg. 62, nr. 6,

str. 313-318, ilustr. [COBISS.SI-ID 7138644]

DOBNIKAR, Andrej, ŠTER, Branko. Structural properties of recurrent neural networks. Neural processing letters, ISSN 1370-4621. [Print ed.], 2009, vol. 29, no. 2, str. 75-88, graf. prikazi. [COBISS.SI-ID 7085652]