

Study program: Informatics			
Course title: Computer Architecture			
Professor/assistant: Ivan D. Petrović and Miodrag M. Marković			
Type of course: Compulsory			
ECTS credits: 6			
Prerequisites: Basics of computer technology			
Aims of the course: Acquiring general and specific knowledge about computer architecture and computer organization.			
Learning outcomes: The knowledge gained at this course will enable students to understand the way the computer is organized and the way the hardware components work. Students become acquainted with past, present and latest developments in the computer architecture.			
Syllabus: <i>Theoretical Lessons</i> A review of basic digital electronics. The concept of computer architecture. Structured organization of computers. Key points of the development of computer architecture. Organization of computer systems. Processors – organization, design principles, parallelism at the level of processor instructions, processor registers. CPUs with multiple cores. Evolution of Intel x86 architecture. Memory – technology, memory addresses, error correction codes, cache memory, memory packs, hierarchical memory organization (latch circuits, flip flops, registers, RAM, ROM, ...), external memory. Bus – the term, the width of the bus, arbitration, synchronization of bus timings, bus operation, ways to increase the speed of information flow, examples of the bus (ISA, PCI, PCI Express, USB-2.0 and 3.0). Executing instructions and programs. Assembler. What is the Assembler? Programming in the assembler language. <i>Practical Lessons</i> Auditory and practical exercises (EWB software package).			
Literature: 1. Organizacija i arhitektura računara: projekat funkciji performansi, prevod devetog izdanja, William Stallings, Računarski fakultet Beograd, CET; ISBN: 978-86-7991-361-6, 2013 2. Arhitektura i organizacije računara, Andrew S. Tanenbaum, Mikro knjiga, Beograd, 2006.			
Number of active classes: 60		Lectures: 30	Practical classes: 30
Teaching methods: Lectures and practical computer exercises.			
Grading system (maximum 100 points)			
grading scale from 5 to 10: below 51 points – student fails the exam, grade 6 from 51- 60 points, grade 7 from 61- 70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91- 100 points.			
Pre-exam obligations:	Points:	Final exam:	Points:
Activity during theoretical lectures	max 5	Oral exam	50
Practical training	max 5		
Written test(s)	max 25		
Term paper	max 15		
Minimum requirement for the final exam	30		