

Study Programme: Information Technology - Software Engineering		
Course Unit Title: Organization and architecture of computer systems		
Course Unit Code: OAS283		
Name of Lecturer(s): Associate Professor Zeljko Stojanov, PhD		
Type and Level of Studies: Bachelor Academic Degree		
Course Status (compulsory/elective): Compulsory		
Semester (winter/summer): Summer		
Language of instruction: English		
Mode of course unit delivery (face-to-face/distance learning): Face-to-face		
Number of ECTS Allocated: 6		
Prerequisites: None		
Course Aims: Acquiring basic knowledge about the structural organization of computer systems, the architecture of computer systems and the way of presenting and execute programs in computers.		
Learning Outcomes: Acquired knowledge will enable students to: understand the operation of computer systems at the level of digital logic, understand the structural organization of computers on multiple levels, understand the presentation of data at the machine level, use the set of instructions for the selected computer system, and use the assembly language. Students will be trained for independent practical work, as well as for solving problems.		
Syllabus: <i>Theory</i> Introduction to the structural organization of computer systems. Digital logic level. The basic circuits of digital logic. Organization of computer systems: processor, basic memory, secondary memory, input-output, buses. Structural organization of computers on multiple levels. Level of microarchitecture. The instruction set architecture: memory models, data types, instruction formats, addressing, execution flow. Assembler language level: processing of assembly programs, assembly process, linking and loading programs, static and dynamic libraries. <i>Practice</i> Mastering the basic principles of operation of microprocessor-based computer systems for the family of 32-bit and 64-bit Intel microprocessors. Solving practical problems by writing programs in assembly language for the selected microprocessor family.		
Required Reading: 1. Andrew S. Tanenbaum and Todd Austin. Structured computer organization, 6th ed. Pearson Education. Upper Saddle River, NJ, USA.2013. 2. Kip R. Irvine. Assembly language for x86 processors (6th edition). Pearson Education. Upper Saddle River, NJ, USA. 2011.		
Weekly Contact Hours: 4	Lectures: 2	Practical work: 2
Teaching Methods: Lectures. Practical laboratory exercises.		
Knowledge Assessment (maximum of 100 points): 100		

Pre-exam obligations	Points	Final exam	Points
Test I	20	oral exam	40
Test II	20		
Test III	20		