

Subject card

Subject name and code	Computer System Architecture, PG_00198510						
Field of study	Informatics						
Date of commencement of studies	October 2026		Academic year of realisation of subject			2027/2028	
Education level	Bachelor's studies		Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	part-time studies		Mode of delivery			at the university	
Year of study	2		Language of instruction			Polish	
Semester of study	4		ECTS credits			3.0	
Learning profile	academic		Assessment form			credit	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		mgr Łukasz Mielewczyk				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	20		0.0		55.0	75
Subject objectives	The aim of the course is to familiarize students with the fundamentals of digital technology, to explain the architecture and operation of the x86 processor, and to introduce them to assembly language programming.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[INFOL3_W07] knows and understands the most important elements of computer systems architecture and the principles of operating systems with particular emphasis on concurrency, task serialization and memory and process management		understands the basics of computer system architecture			[SW4] test/exam - oral or written	
	[INFOL3_U06] is able to select and apply appropriate IT methods and tools to solve complex problems, is able to use acquired knowledge by appropriately selecting sources and information derived from them, and perform evaluation, critical analysis, and synthesis of this information		is able to use technical documentation on assembly language and other topics related to the management of computer system components			[SU4] test/exam - oral or written	
Subject contents	1. Encoding of numerical and textual information in computer systems and positional notation of numbers. 2. Boolean algebra in digital technology and logic circuits: combinational circuits, sequential circuits, canonical form of logic functions, examples of methods for minimizing logic functions. 3. Examples of computer system components: central processing unit (CPU), random access memory (RAM), floating-point unit (FPU), interrupt mechanism, input/output (I/O) ports. 4. The structure of selected components of a computer system: the processor, main memory, and arithmetic coprocessor. 5. Processor operation in memory management modes. 6. Basics of assembly language programming.						

Prerequisites and co-requisites	Completion of the following courses: Wstęp do programowania (Introduction to Programming), Matematyka dyskretna (Discrete Mathematics), Wstęp do matematyki (Introduction to Mathematics).		
	Knowledge of the basics of structured programming and the fundamental mathematical concepts used in computer science.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture: test	51.0%	20.0%
	Laboratory exercises: test	51.0%	80.0%
Recommended reading	Basic literature	1. J. Biernat, <i>Metody i układy arytmetyki komputerowej</i>, Państwowe Wydawnictwo Naukowe, Warszawa 2001. 2. B.S. Chalk, <i>Organizacja i architektura komputerów</i>, Wydawnictwa Naukowo-Techniczne, Warszawa 1998. 3. R. Hyde, <i>Asembler Sztuka programowania</i>, tłumaczenie: P. Szeremiot, Helion, Gliwice 2011. 4. S. Kruk, <i>Asembler. Wykłady i ćwiczenia</i>, Państwowe Wydawnictwo Naukowe, Warszawa 2009. 5. G. Michalek, <i>Asembler. Miniprzewodnik</i>, Wydawnictwo Intersoftland, Warszawa 2001. 6. A. Skorupski, <i>Podstawy budowy i działania komputerów</i>, Wydawnictwa Komunikacji i Łączności, Warszawa 2004.	
	Supplementary literature	1. A. Błaszczak, <i>Win32ASM. Asembler w Windows</i>, Helion, Gliwice 2004. 2. J.V. Hoey, <i>Programowanie w asemblerze x64. Od nowicjusza do znanca AVX</i>, Helion, Gliwice 2023. 3. S. Kruk, <i>Asembler. Kurs programowania dla średniozaawansowanych</i>, Mikom, Warszawa 2001. 4. S. Kruk, <i>Procesor Pentium</i>, Wydawnictwo PJL, Warszawa 1998. 5. D.W. Lewis, <i>Między asemblerem a językiem C</i>, Wydawnictwo RM, Warszawa 2004. 6. P. Metzger; A. Jełowicki, <i>Anatomia PC</i>, Helion, Gliwice 1999. 7. W. Stanisławski; D. Raczyński, <i>Programowanie systemowe mikroprocesorów rodziny x86</i>, Państwowe Wydawnictwo Naukowe, Warszawa 2020.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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