



Subject card

Subject name and code	Basics of Algorithm Analysis, PG_00058918						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
Education level	first-cycle 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			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tytus Pikies					
	Teachers	dr inż. Tytus Pikies					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	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	30	4.0		66.0	100	
Subject objectives	Obtaining skills of algorithms analysis in terms of computational complexity and memory complexity.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W01] knows and understands, to an advanced extent, mathematics necessary to formulate and solve simple issues related to the field of study	Student will learn principle issues of correct design of programs and will learn how to analyse the complexity of programs. This concerns both recursive and non-recursive programs. In addition, he will know how to analyse the space complexity of programs.			[SW1] Assessment of factual knowledge		
	[K6_W04] knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Student will learn principle issues of correct design of programs and will learn how to analyse the complexity of programs. This concerns both recursive and non-recursive programs.			[SW1] Assessment of factual knowledge		
	[K6_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study and perform tasks, in an innovative way, in not entirely predictable conditions, by:n- appropriate selection of sources and information obtained from them, assessment, critical analysis and synthesis of this information,n- selection and application of appropriate methods and toolsn	Student will learn principle issues of correct design of programs and will learn how to analyse the complexity of programs. This concerns both recursive and non-recursive programs.			[SU4] Assessment of ability to use methods and tools		

Subject contents	Course content – lecture 1. Algorithmic and non-algorithmic problems 2. Turing machine 3. The concept of computational complexity 4. Implementation and programming 5. Analysis of recursive algorithms, algorithms "divide and conquer" 6. Analysis of recursive algorithms, algorithms "one step back" 7. Fast matrix multiplication 8. Non-deterministic algorithms 9. Information on NP-hard problems.		
Prerequisites and co-requisites	Passing the exam of discrete mathematics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written colloquium	50.0%	100.0%
Recommended reading	Basic literature	M. Kubale: Łagodne wprowadzenie do analizy algorytmów, WPG, Gdańsk, 2009. M. Kubale: Introduction to Computational Complexity and Algorithmic Graph Coloring, WGTN, Gdańsk, 1999.	
	Supplementary literature	No requirements	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Practical activities within the subject	Not applicable		

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