GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Algorithms and Data Structures, PG_00047803
Field of study	Informatics

Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
Education level	first-cycle studies	Subject group	Optional subject group
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	8.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	dr Marcin Jurkiewicz
	Teachers	dr Marcin Jurkiewicz

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	15.0	0.0	45
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						

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	45	8.0	147.0	200

Subject objectives	The aim of the course is to teach students skills and present necessary tools to evaluate the effectiveness of a existing code, and to efficiently solve simple algorithmic problems.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W06] Knows and understands the basic processes occurring in the life cycle of devices, facilities and systems specific to a given field of study.		[SW1] Assessment of factual knowledge
	[K6_U07] can apply methods of process and function support, specific to the field of study		[SU1] Assessment of task fulfilment
	[K6_U43] can analyse date and formulate, apply and assess appropriate formal models and algorithms for solving problems in the field of information systems and applications		[SU1] Assessment of task fulfilment

Subject contents	Introduction to computational complexity. Basic terms. Basic data structures. Arrays. Recursive data structures. Stacks and queues. Simple array sorting. Binary search. Quick sort, heap sort. Order statistic. Linear time sorting. List sorting. Binary search trees. Dictionary trees. Red-black trees, B-trees. Exitending binary trees. Binomial heaps. Fibonacci heaps. Construction of algorithms. Selected graph algorithms. Basic text algorithms. Hash tables. Direct addressing. Collision resolution. Hard computational problems. Introduction to general heuristics. Disjoint sets.		
Prerequisites and co-requisites	basic knowledge of C language		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	50.0%
	Project	50.0%	50.0%
Recommended reading	Basic literature	T.Cormen i in. "Introduction to data structures" L.Banachowski i in. "Algorytmy i struktury danych" N.Wirth "Algorithms + data structures = computer programs"	
	Supplementary literature	L.Banachowski i in. "Analiza algorytmów i struktur danych" M.Sysło i in. "Algorytmy optymalizacji dyskretnej" Krzysztof Goczyła "Struktury danych"	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		