



Subject card

Subject name and code	Programming, PG_00021027						
Field of study	Mathematics						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2023/2024		
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	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Probability Theory and Biomathematics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Wojda				
	Teachers		dr inż. Paweł Wojda mgr inż. Katarzyna Tessmer				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie: Programowanie, lato 2023/2024 - Moodle ID: 36029 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36029						
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	60		5.0		60.0	125
Subject objectives	Mastering the ability to write simple algorithms in the selected programming language; compiling, starting and testing simple programs. Mastering the skill of analyzing simple algorithms.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K03		Student in laboratory: - implements three independent programs.		[SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK2] Assessment of progress of work		
	K6_W09		Student: - uses software development tools for C/C++, - uses internet to find information about C/C++ and programming		[SW1] Assessment of factual knowledge		
	K6_W08		Student: - recognizes elements of programs and explains their meaning - enumerates program quality criteria.		[SW1] Assessment of factual knowledge		
	K6_U07		Student: - designs simple algorithms and their tests.		[SU4] Assessment of ability to use methods and tools		

Subject contents	Lecture: 1. Numbers in computer systems: Computer memory. Integer numbers. Floating-point numbers. Vectors and matrices. 2. Iteration: Processor. Conditional instruction. Switching instruction. Loops. Optimization. Searching a number and sorting numbers. Horner algorithm. Disc file operations. Algorithm complexity. Good style of programming. Program testing. 3. Alphabet and text: ASCII code and UNICODE. Characters. Strings. Searching and sorting of strings. 4. Procedures and functions: Definition, parameters and local variables. Library of functions. Projects. Recursive algorithms 5. Data structures: Definition of data structure. Dynamic memory management . Application of data structures 6. Class and object: Class definition and application. Object. Constructor. Overloaded methods and operators. "Friend" functions. Inheritance. Laboratory: Implementation of iteration algorithm, program with own functions with teacher help. Three programs without teacher care.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture test	50.0%	25.0%
	Practical exercise	50.0%	50.0%
	Two tests	50.0%	25.0%
Recommended reading	Basic literature	Kernighan W., Ritchie B.W.: The ANSI C Programming Language (2nd Edition), Prentice Hall; (April 1, 1988) Eckel B.: Thinking in C++: Introduction to Standard C++, Volume One (2nd Edition), Prentice Hall; (March 25, 2000)	
	Supplementary literature	D. Harel, <i>Algorithmics: The Spirit of Computing</i> , Addison-Wesley, Reading, MA, 1987. 3rd edition, 2004 (with Y. Feldman).	
	eResources addresses	Programowanie, lato 2023/2024 - Moodle ID: 36029 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36029	
Example issues/ example questions/ tasks being completed	To design an iterative algorithm employing Horner scheme and write a program, in C / C + +, implementing this algorithm.		
Work placement	Not applicable		