



## Subject card

Subject name and code	Programming, PG_00064129						
Field of study	Informatics, Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
Education level	second-cycle studies	Subject group				Obligatory subject group in the field of study	
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	1	Language of instruction				English	
Semester of study	1	ECTS credits				7.0	
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 Marcin Jurkiewicz				
	Teachers		dr Marcin Jurkiewicz				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	20.0	0.0	80
	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	80		11.0		84.0	175
Subject objectives	The aim of the course is to learn students programming and implementation of programs in the Linux/Visual Studio environment. Students should master C/C++ instructions, data types and structures, operators, functions and related algorithms. Students should acquire knowledge about structures, functions and other basic concepts related to programming in C/C++.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices		A student knows the basic rules of C/C++ and data structures and algorithms.			[SW1] Assessment of factual knowledge	
	[K7_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it		A student is able to use the given knowledge (from the lecture), basic techniques of C/C++ and software in Linux/Visual Studio to write and compile programs.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment	

Subject contents	Course content – lecture 1. Programming languages, alphabet, syntax and semantics. Translation. 2. Classification of data types. Integer and floating point types. 3. Arithmetic expressions and operators. 4. Selected standard functions. 5. Character type. Casting of types. 6. Logical type. Logical operators and expressions. 7. Input/output basics. 8. Conditional statements (if, switch) and conditional expression. 9. Iteration statements (for, while, do-while), nested iterations. 10. Defining types. Constants. Enumerated type. 11. One- and multi-dimensional arrays. Null-terminated strings. 12. Basic rules for scope and lifetime of variables. 13. Functions. Scope and lifetime of variables. Side effect. 14. Passing parameters of a function. 15. Pointer type and pointer arithmetics. 16. Pointers for inter-function communication. 17. Dynamic memory allocation. 18. Structures. 19. Basics of complexity theory and O notation 20. Polynomial and NP-hard problems 21. Sorting algorithms 22. Heaps and heapsort 23. Stacks and queues 24. Hash tables 25. Algorytmy zachłanne, heuristics and exhaustive algorithms														
Prerequisites and co-requisites	No requirements														
Assessment methods and criteria	<table border="1" data-bbox="451 770 1492 1003"> <thead> <tr> <th data-bbox="451 770 794 804">Subject passing criteria</th> <th data-bbox="794 770 1142 804">Passing threshold</th> <th data-bbox="1142 770 1492 804">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 804 794 837">Exam</td> <td data-bbox="794 804 1142 837">50.0%</td> <td data-bbox="1142 804 1492 837">40.0%</td> </tr> <tr> <td data-bbox="451 837 794 916">Laboratory: correctness, algorithms, structures, runtime and universality.</td> <td data-bbox="794 837 1142 916">50.0%</td> <td data-bbox="1142 837 1492 916">30.0%</td> </tr> <tr> <td data-bbox="451 916 794 1003">Project: correctness, algorithms, structures, runtime and universality.</td> <td data-bbox="794 916 1142 1003">50.0%</td> <td data-bbox="1142 916 1492 1003">30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Exam	50.0%	40.0%	Laboratory: correctness, algorithms, structures, runtime and universality.	50.0%	30.0%	Project: correctness, algorithms, structures, runtime and universality.	50.0%	30.0%
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Recommended reading	Basic literature	1. KERNIGHAN, Brian W.; RITCHIE, Dennis M. <i>The C programming language</i> , Prentice Hall, 2006													
	Supplementary literature	1. B. Stroustrup, <i>The C++ Programming Language</i> , Addison Wesley Longman, 2000													
	eResources addresses														
Example issues/ example questions/ tasks being completed	<p data-bbox="451 1162 1492 1196"><b>What is the result of the following code?</b></p> <pre data-bbox="451 1339 1492 1496">int i;  for(i=0;i&lt;3;i++); cout &lt;&lt; i; cout &lt;&lt; i+1;</pre> <p data-bbox="451 1547 1492 1581">a) 011223 b) 0124 c) 0123 d) 34 e) 124 f) 45</p>														
Practical activities within the subject	Not applicable														

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