



## Subject card

Subject name and code	Programming, PG_00046329						
Field of study	Electronics and Telecommunications, Informatics, Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
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			5.0		
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	15.0	0.0	15.0	10.0	0.0	40
	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	40		20.0		65.0	125
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 resources, operators and functions. 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_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		
[K7_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		A student knows the basic rules of C/C++.		[SW1] Assessment of factual knowledge			

Subject contents	<ol style="list-style-type: none"> <li>1. Programming languages, alphabet, syntax and semantics. Translation.</li> <li>2. Classification of data types. Integer and floating point types.</li> <li>3. Arithmetic expressions and operators.</li> <li>4. Selected standard functions.</li> <li>5. Character type. Casting of types.</li> <li>6. Logical type. Logical operators and expressions.</li> <li>7. Input/output basics.</li> <li>8. Conditional statements (if, switch) and conditional expression.</li> <li>9. Iteration statements (for, while, do-while), nested iterations.</li> <li>10. Defining types. Constants. Enumerated type.</li> <li>11. One- and multi-dimensional arrays. Null-terminated strings.</li> <li>12. Basic rules for scope and lifetime of variables.</li> <li>13. Functions. Scope and lifetime of variables. Side effect.</li> <li>14. Passing parameters of a function.</li> <li>15. Pointer type and pointer arithmetics.</li> <li>16. Pointers for inter-function communication.</li> <li>17. Dynamic memory allocation.</li> <li>18. Structures.</li> </ol>														
Prerequisites and co-requisites	No requirements														
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Subject passing criteria</th> <th style="width: 25%;">Passing threshold</th> <th style="width: 25%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Exam</td> <td>50.0%</td> <td>40.0%</td> </tr> <tr> <td>Project: correctness, algorithms, structures, runtime and universality.</td> <td>50.0%</td> <td>30.0%</td> </tr> <tr> <td>Laboratory: correctness, algorithms, structures, runtime and universality.</td> <td>50.0%</td> <td>30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Exam	50.0%	40.0%	Project: correctness, algorithms, structures, runtime and universality.	50.0%	30.0%	Laboratory: 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	Adresy na platformie eNauczanie:													
Example issues/ example questions/ tasks being completed	<p><b>What is the result of the following code?</b></p> <pre> int i;  for(i=0;i&lt;3;i++);  cout&lt;  cout&lt;  a) 011223 b) 0124 c) 0123 d) 34 e) 124 f) 45 </pre>														
Work placement	Not applicable														