



Subject card

Subject name and code	Fundamentals of programming, PG_00058347						
Field of study	Hydrogen Technologies and Electromobility						
Date of commencement of studies	October 2024	Academic year of realisation of subject				2024/2025	
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				4.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Piotr Jasiński				
	Teachers		dr inż. Milena Marycz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45		7.0		48.0	100
Subject objectives	The objective of the course is to develop competencies in programming using C/C++ languages. Students will acquire the skills to design and analyze algorithms and to develop software, including the use of instructions, data types, operators, and functions. They will also master advanced concepts such as structures and pointers, essential for effective programming in C/C++.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K6_U09] is able to use their knowledge in the field of programming methods and techniques and select and apply appropriate programming methods and tools in creating computer software or programming devices or controllers using microprocessors or programmable elements or systems, characteristic for a given field of study		Applies C/C++ techniques to write and compile a program implementing specified algorithms.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment	
	[K6_W14] knows and understands at an advanced level the principles, methods and techniques of programming and the principles of creating computer software or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, as well as the organization of the work of systems using computers or these devices		Defines the principles of programming in C/C++.			[SW1] Assessment of factual knowledge	

Subject contents	<p>LECTURE:</p> <p>Introduction, alphabet, syntax, and semantics. Translation. Classification of types. Operators and arithmetic expressions. Selected standard functions. Boolean type. Logical operators and expressions. Basics of input/output handling. Control statements. Sequence. Conditional statements (if, switch) and conditional expressions. Iterative statements (for, while, do-while). Nested iterations. Selected specifiers and operators. Defining types. Constants. Enumeration type. One-dimensional and multi-dimensional arrays. Strings. Scope and lifetime of objects. Enumerations and enumeration types. Functions. Scope and lifetime of variables. Side effects. Function parameter passing. Pointer type. Pointer arithmetic. Pointers in inter-function communication. Casting. Dynamic memory allocation. Character type. Structures. The concept of a class.</p> <p>LABORATORY:</p> <p>Introduction. Conditional statements. Iterations. Arrays. Subprograms. Pointers.</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="459 629 794 660">Subject passing criteria</th> <th data-bbox="802 629 1137 660">Passing threshold</th> <th data-bbox="1145 629 1481 660">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 665 794 696">Laboratory</td> <td data-bbox="802 665 1137 696">60.0%</td> <td data-bbox="1145 665 1481 696">40.0%</td> </tr> <tr> <td data-bbox="459 701 794 732">Lecture</td> <td data-bbox="802 701 1137 732">60.0%</td> <td data-bbox="1145 701 1481 732">60.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Laboratory	60.0%	40.0%	Lecture	60.0%	60.0%
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Example issues/ example questions/ tasks being completed	<p>Writing a programme that implements the given functionality.</p> <p>Analyse how the given programme works.</p>											
Work placement	Not applicable											

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