



Subject card

Subject name and code	Fundamentals of programming, PG_00058347						
Field of study	Hydrogen Technologies and Electromobility						
Date of commencement of studies	October 2022	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	2	Language of instruction			Polish		
Semester of study	3	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	dr inż. Grzegorz Jasiński					
	Teachers	dr inż. Grzegorz Jasiński 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 aim of the course is for students to acquire knowledge and skills in programming. The student should master the ability to create and analyse algorithms and the principles of programming in the C/C++ language: instructions, data types, operators and functions. Students should acquire knowledge of structures, pointers and other basic concepts related to programming in C/C++.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[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	The student knows the principles of programming in C/C++.			[SW1] Assessment of factual knowledge		
	[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	Students can use knowledge provided (from the lecture), techniques of the C/C++ language to write and compile a programme implementing given algorithms.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		

Subject contents	1. programming languages, alphabet, syntax and semantics. Translation. 2. type classification. Integer and floating point types. 3 Arithmetic operators and expressions. 4 Selected standard functions. 5 Character types. Type casting. 6 Logical type. Logical operators and expressions. 7 Fundamentals of input/output handling. 8 Conditional instructions (if, switch) and conditional expressions. 9. iterative instructions (for, while, do-while). Nested iterations. 10. defining types. Constants. Enumeration type. 11. one-dimensional and multi-dimensional arrays. Writers. 12 Validity and lifetime of variables. 13 Functions. Range and lifetime of variables. Side effects. 14. transfer of function parameters. 15. pointer type. The arithmetic of pointers. 16. pointers in communication between functions. 17. dynamic memory allocation. 18. structures											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="451 573 794 611">Subject passing criteria</th> <th data-bbox="794 573 1137 611">Passing threshold</th> <th data-bbox="1137 573 1487 611">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 611 794 640">Lecture</td> <td data-bbox="794 611 1137 640">50.0%</td> <td data-bbox="1137 611 1487 640">50.0%</td> </tr> <tr> <td data-bbox="451 640 794 678">Lab</td> <td data-bbox="794 640 1137 678">50.0%</td> <td data-bbox="1137 640 1487 678">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Lecture	50.0%	50.0%	Lab	50.0%	50.0%
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Example issues/ example questions/ tasks being completed	Writing a programme that implements the given functionality. Analyse how the given programme works.											
Work placement	Not applicable											