GDAŃSK UNIVERSITY OF TECHNOLOGY

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

<table>
<tr><td>Subject contents</td><td>LECTURE:

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.

LABORATORY:

Introduction. Conditional statements. Iterations. Arrays. Subprograms. Pointers.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory</td><td>60.0%</td><td>40.0%</td></tr>
<tr><td>Lecture</td><td>60.0%</td><td>60.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>KERNIGHAN, Brian W.; RITCHIE, Dennis M. The C programming language, Prentice Hall, 2006

Gręboszc Jerzy, Symfonia C++ Standard (tom 1 i 2), Wydanie 2000, Krakow 2008</td></tr>
<tr><td>Supplementary literature</td><td>Stephen Prata, "Jezyk C++. Szkoła programowania". Wydanie VI. Helion 2012

Mirosław J. Kubiak, "C++. Zadania z programowania z przykładowymi rozwiazaniami", Helion 2011

S.S. Skiena, M.A. Revilla, Wyzwania programistyczne, WSiP, W-wa 2004.

M.M. Sysło, Algorytmy, WSiP, W-wa 2002.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Writing a programme that implements the given functionality.

Analyse how the given programme works.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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