GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Programming, PG_00021027		
Field of study	Mathematics		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2021/2022
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	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Probability Theory and Biomathematics -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Magdalena Chmara	
	Teachers	dr Adrian Myszkowski	
		mgr inż. Jakub Ciesielski	
		dr inż. Magdalena Chmara	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21056 Adresy na platformie eNauczanie: Programowanie lato 2021/2022 - Moodle ID: 21056 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21056						

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	60	5.0	60.0	125

Subject objectives	Mastering the ability to write simple algorithms in the selected programming language; compiling, starting and testing simple programs. Mastering the skill of analyzing simple algorithms.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_W08	Student: - recognizes elements of programs and explains their meaning - enumerates program quality criteria.	[SW1] Assessment of factual knowledge
	K6_U07	Student: - designs simple algorithms and their tests.	[SU4] Assessment of ability to use methods and tools
	K6_W09	Student: - uses software development tools for C/C++, - uses internet to find information about C/C++ and programming	[SW1] Assessment of factual knowledge
	K6_K03	Student in laboratory: - implements programs every week.	[SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK2] Assessment of progress of work

Subject contents	Lecture:
	1. Numbers in computer systems: Computer memory. Integer numbers. Floating-point numbers. Vectors and matrices.
	2. Iteration: Processor. Conditional instruction. Switching instruction. Loops. Optimization. Searching a number and sorting numbers. Horner algorithm. Disc file operations. Algorithm complexity. Good style of programming. Program testing.
	3. Alphabet and text: ASCII code and UNICODE. Characters. Strings. Searching and sorting of strings.
	4. Procedures and functions: Definition, parameters and local variables. Library of functions. Projects. Recursive algorithms
	5. Data structures: Definition of data structure. Dynamic memory management . Application of data structures
	6. Class and object: Class definition and application. Object. Constructor. Overloaded methods and operators. "Friend" functions. Inheritance.
	Laboratory:
	Lab 1: Introduction to C programming
	Lab 2: Variables, Conditional and Choice Statements in C language
	Lab 3: The for loop in C language
	Lab 4: while and do-while loops in C language
	Lab 5: Functions and recursion in C language
	Lab 6: Arrays in C ++
	Lab 7: Strings in C ++
	Lab 8: File handling in C ++
	Lab 9: Data structures in C ++
	Lab 10: Classes and objects in C ++
	Lab 11: Inheritance in C ++
	Lab 12: GUI
	Lab 13: GUI
	Lab 14: Exceptions, debugging
	Lab.15: Summary

Prerequisites and co-requisites	

Assessment methods and criteria			

Subject passing criteria	Passing threshold	Percentage of the final grade
Exercises (during laboratories)	0.0%	65.0%
Five longer practical tasks	0.0%	15.0%
Lecture tests	50.0%	20.0%

Recommended reading	Basic literature	1. Mikael Olsson, Modern C Quick Syntax Reference: A Pocket Guide to the Language, APIs and Library, APRESS 2019, 2. Ivor Horton Peter Van Weert, Beginning C++17 From Novice to Professional Fifth Edition, APRESS 2018
	Supplementary literature	Eckel B.: Thinking in C++: Introduction to Standard C++, Volume One (2nd Edition), Prentice Hall; (March 25, 2000) Brian W. Kernighan, Dennis M. Ritchie, C Programming Language, 2nd Edition, Prentice Hall International 2003

	eResources addresses	Podstawowe
		https://doi.org/10.1007/978-1-4842-4288-9 - Mikael Olsson, Modern C Quick Syntax Reference: A Pocket Guide to the Language, APIs and Library, APRESS 2019, Programowanie lato 2021/2022 - Moodle ID: 21056 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21056
Example issues/ example questions/ tasks being completed	To design an iterative algorithm employing Horner scheme and write a program, in C / C + +, implementing this algorithm.	
Work placement	Not applicable	