



Subject card

Subject name and code	Basics of computer programming, PG_00045290						
Field of study	Data Engineering						
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			English		
Semester of study	1	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Dariusz Dereniowski				
	Teachers		prof. dr hab. inż. Dariusz Dereniowski mgr inż. Robert Ostrowski dr inż. Tytus Pikies				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	20.0	0.0	65
	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	65	10.0		50.0	125	
Subject objectives	The aim of the course is an introduction to computer programming, whose main goal is to teach student solving programming tasks and writing programs in C/C++.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[[K6_W05] Knows and understands programming models and evolution of related languages. Knows the methods of analysing and designing information systems and the modeling languages used in them, as well as the basic object-oriented programming platforms.		Student knows and understands selected programming models and corresponding programming languages. Student learns one of the object oriented programming platforms.		[SW1] Assessment of factual knowledge		
	[[K6_U01] programs in procedural, object, functional and logic programming languages, codes programs at the processor instruction level, runs and tests programs.		Student is able to code in procedural programming language, runs and tests programs.		[SU1] Assessment of task fulfilment		

Subject contents	<p>LECTURES Introduction. Programming languages, alphabet, syntax and semantics. Translation. Classification of data types. Integer and floating point types. Arithmetic expressions and operators. Standard mathematical functions. Character type. Casting. Logical type. Logical operators and expressions. Basics of input/output processing. Conditional statements (if, switch) and conditional expression. Iteration statements (for, while, do-while). Nested iterations. Defining types. Enumerated type. Constants. One- and multi-dimensional arrays. Null-terminated strings. Scope and lifetime of variables. Functions. Side effect. Passing parameters to functions. Pointer type. Pointer arithmetic. Pointers for inter-function communication. Dynamic memory allocation. Basic dynamic data structures. Records (structures). Data structures using records and their applications. Applications of dynamic data structures (stacks, queues). Introduction to object oriented programming. Defining classes. Applications of object oriented paradigm. Input/output streams classes. Input/output formatting. File processing. Applications of recurrence (e.g. divide and conquer, greediness, dynamic programming).</p> <p>LABORATORIES Solving simple programming tasks according on knowledge provided in lectures and based on provided manual.</p> <p>PROJECT Independent solving programming tasks. Student has access to dedicated tutors.</p>														
Prerequisites and co-requisites	No requirements														
Assessment methods and criteria	<table border="1" data-bbox="448 692 1487 831"> <thead> <tr> <th data-bbox="448 692 794 730">Subject passing criteria</th> <th data-bbox="794 692 1141 730">Passing threshold</th> <th data-bbox="1141 692 1487 730">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 730 794 763">project</td> <td data-bbox="794 730 1141 763">50.0%</td> <td data-bbox="1141 730 1487 763">30.0%</td> </tr> <tr> <td data-bbox="448 763 794 797">laboratories</td> <td data-bbox="794 763 1141 797">50.0%</td> <td data-bbox="1141 763 1487 797">30.0%</td> </tr> <tr> <td data-bbox="448 797 794 831">written test</td> <td data-bbox="794 797 1141 831">50.0%</td> <td data-bbox="1141 797 1487 831">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	project	50.0%	30.0%	laboratories	50.0%	30.0%	written test	50.0%	40.0%
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Recommended reading	<p>Basic literature</p> <p>Supplementary literature</p> <p>eResources addresses</p>	<p>1. Programming – lecture slides, 2013 (available on course website).</p> <p>2. Materials for laboratories (2013) (available on course website).</p> <p>3. Grębosz Jerzy, Symfonia C++ Standard (vol. 1 and 2), Edition 2000, Cracow 2008.</p> <p>-</p>													
Example issues/ example questions/ tasks being completed	<p>Writing a program that fulfills a given specification.</p> <p>Analysis of a behavior of a given code.</p>														
Work placement	Not applicable														