



## Subject card

Subject name and code	Object programming, PG_00045295						
Field of study	Data Engineering						
Date of commencement of studies	October 2023	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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Geoinformatics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Moszyński					
	Teachers	mgr inż. Tomasz Bieliński mgr inż. Tomasz Idzi dr hab. inż. Marek Moszyński					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	11.0	30.0	0.0	56
	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	56	6.0		13.0	75	
Subject objectives	Theory and practice on object oriented programming						
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.	The lectures give the idea of object oriented programming with the four different programming languages i.e. C++, Java, C# and Python.			[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.	The practical skills are verified by programming using a few object oriented languages			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		

Subject contents	1. Software programming paradigms including object oriented approach  2. Encapsulation, inheritance, abstraction and polymorphism in C++ language  3. Specific features of C++ object-orientation  4. Java language and its comparison to C++ language  5. C# language as sucesor of C++ and Java languages  6. Python as a scripting object oriented language														
Prerequisites and co-requisites	Knowledge on non-object oriented language i.e. C language.														
Assessment methods and criteria	<table border="1" data-bbox="448 618 1487 757"> <thead> <tr> <th data-bbox="448 618 794 651">Subject passing criteria</th> <th data-bbox="794 618 1141 651">Passing threshold</th> <th data-bbox="1141 618 1487 651">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 651 794 685">lecture</td> <td data-bbox="794 651 1141 685">60.0%</td> <td data-bbox="1141 651 1487 685">34.0%</td> </tr> <tr> <td data-bbox="448 685 794 719">project</td> <td data-bbox="794 685 1141 719">60.0%</td> <td data-bbox="1141 685 1487 719">33.0%</td> </tr> <tr> <td data-bbox="448 719 794 757">laboratory</td> <td data-bbox="794 719 1141 757">60.0%</td> <td data-bbox="1141 719 1487 757">33.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	lecture	60.0%	34.0%	project	60.0%	33.0%	laboratory	60.0%	33.0%
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Recommended reading	Basic literature	Bjarne Stroustrup - The C++ programming language  Bruce Eckel - Thinking in Java  Andy Harris - Microsoft C# for absolute beginner  Mark Lutz - Programming Python													
	Supplementary literature	John Hunt - Smalltalk and Object Orientation													
	eResources addresses	Adresy na platformie eNauczanie: Object Programming 2024 - Moodle ID: 36619 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36619">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36619</a>													
Example issues/ example questions/ tasks being completed	Sample question: What are the trends of C++ evolution?  Sample task: implementation of simple object oriented software module using object oriented paradigms in different languages														
Work placement	Not applicable														

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