

Subject card

Subject name and code	Advanced Programming in C++, PG_00179323						
Field of study	Informatics						
Date of commencement of studies	October 2023		Academic year of realisation of subject			2025/2026	
Education level	Bachelor's studies		Subject group			Obligatory subject group in the field of study Optional subject group 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	3		Language of instruction			Polish	
Semester of study	6		ECTS credits			3.0	
Learning profile	academic		Assessment form			credit	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Tomasz Borzyszkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30		0.0		0.0	30
Subject objectives	The aim of the course is to teach students the basic programming constructs available in the C++ language.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[INFL3_U06] is able to design, create, run and test programs using dedicated tools and adequate templates		The student is able to apply programming and code quality maintenance paradigms in his/her own projects			[SU2] presentation/project/paper/report	
	[INFL3_U03] can design and analyze algorithms for their correctness and computational complexity using appropriate algorithmic techniques and data structures		The student is able to use selected C++ language libraries to solve programming problems			[SU2] presentation/project/paper/report	
	[INFL3_W05] has general knowledge of various programming paradigms and programming languages; has detailed knowledge of object-oriented design and programming methods and patterns		The student understands the principles of the C++ language and knows how the basic programming constructs work in this language			[SW2] presentation/project/paper/report	

Subject contents	1. The basics of object-oriented programming (constructors, destructors, memory management) 2. Inheritance and polymorphism 3. Overloading operators and exceptions 4 STL library 5. Move semantics and lambda expressions 6. Smart pointers 7. Templates and concepts		
Prerequisites and co-requisites	The student should be familiar with basic programming constructs and the basics of object-oriented programming		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project presentation, observation of student work	51.0%	100.0%
Recommended reading	Basic literature	B. Stroustrup. Język C++. Kompendium wiedzy, Helion 2014 N. Josuttis "C++ Biblioteka Standardowa, podręcznik programisty", Wydawnictwo HELION 2003. B. Eckel, Ch. Allinson, "Thinking in C++" Edycja Polska, tom 2, Wydawnictwo HELION 2004.	
	Supplementary literature	Stephan Roth, Clean C++20 Sustainable Software Development Patterns and Best Practices, APress, czerwiec 2021	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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