

Subject card

Subject name and code	Advanced C++ programming (P), PG_00168368						
Field of study	Informatics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		2.0		
Learning profile	practical		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_W03] has ordered knowledge in software engineering and project management methodologies, IT project life cycle, software specification, validation and verification, design patterns		The student is able to apply programming and code quality maintenance paradigms in his/her own projects		[SW2] presentation/project/paper/report		
	[INFL3_W04] has ordered, theoretically founded knowledge in programming, algorithms and complexity, programming languages and paradigms		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		
	[INFL3_U08] assesses the usefulness of various paradigms and related programming tools to solve various types of problems		The student is able to use selected C++ language libraries to solve programming problems		[SU2] 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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