

Subject card

Subject name and code	Programming Methods, PG_00191646						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Bachelor's 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	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	30.0	0.0	0.0	45
	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	45		0.0		30.0	75
Subject objectives	The aim of the course is to familiarise students with the principles of structured and object-oriented programming in combination with good programming practices on the basis of the selected programming language.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFOL3_U06] is able to select and apply appropriate IT methods and tools to solve complex problems, is able to use acquired knowledge by appropriately selecting sources and information derived from them, and perform evaluation, critical analysis, and synthesis of this information						
[INFOL3_W05] knows and understands advanced concepts in the field of various programming paradigms and programming languages; as well as object-oriented design and programming methods and patterns		student explains the operation of basic programming constructs such as selection instructions, loops, blocks, structures, etc.		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report			

Subject contents

1. Basic concepts:- compilers and interpreters

- simple and structured data types and operations on data.

2. Functions:

- the definition of a function and its importance in computer program design
- methods of passing parameters to a function and returning a result
- lambda functions, their mathematical basis and use in a computer program
- documentation of functions.

3. Modules and packages:

- the concept of namespaces
- definition of a module and how to import it
- creation of packages/solution libraries.

4. Classes and objects:

- class definition and object creation
- inheritance and attributes
- use of polymorphic functions in object-oriented programming.

5. Unit testing:

- concepts of test-driven programming
- creation of unit tests- test automation
- creating behavioural tests

6. Files and exceptions:

- basic file operations
- serialisation and deserialisation of data
- exception creation, raising and handling.

7. Regular expressions:- overview of basic constructs

	<ul style="list-style-type: none"> - groups and subgroups of regular expressions - using regular expressions for selected programming tasks. <p>8. Clean code:</p> <ul style="list-style-type: none"> - an overview of basic programming paradigms and their practical application with selected examples - use of selected design patterns - the concept of technological debt. 		
Prerequisites and co-requisites	'Introduction to programming' completed		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project presentation, observation of student work	51.0%	50.0%
	activity in class	0.0%	10.0%
	exam	51.0%	40.0%
Recommended reading	Basic literature	<p>Programming methodology: Robert C. Martin, Clean Code. A good programmer's handbook. Helion 2023. Beck Kent, T.D.D. The art of creating good code Helion Publishing House, 2020. Harry J.W. Percival. TDD in practice. Reliable Python code. Helion Publishing House, 2020. Eric Freeman, Elisabeth Freeman, Kathy Sierra, Bert Bates, Head First Design Patterns. Polish edition (Move your head!). Helion 2020. Selected programming language: Guido van Rossum, Python Tutorial, http://docs.python.org/tut/. Mark Pilgrim, Dive into Python. http://diveintopython.org/. Bruce Eckel, Thinking in Python, http://www.mindview.net/Books/TIPython. Python's official documentation, http://docs.python.org/.</p>	
	Supplementary literature	None	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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