

**Subject card**

<b>Subject name and code</b>	Advanced Programming Languages, PG_00203626						
<b>Field of study</b>	Informatics						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2026/2027		
<b>Education level</b>	Master's studies	<b>Subject group</b>			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
<b>Mode of study</b>	part-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	1	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	1	<b>ECTS credits</b>			5.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			exam		
<b>Conducting unit</b>	Institute of Informatics -> Faculty of Mathematics, Physics and Informatics -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr hab. Wiesław Pawłowski				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	20.0	0.0	20.0	0.0	0.0	40
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	40		0.0		85.0	125
<b>Subject objectives</b>	The purpose of the course is to familiarize the student with the advanced mechanisms found in modern programming languages and their correct and effective use.						
<b>Learning outcomes</b>	<b>Course outcome</b>		<b>Subject outcome</b>			<b>Method of verification</b>	
	[[INFMU2_U05] can apply known algorithms in specific situations, can effectively select the type of algorithm depending on the problem at hand						
	[[INFMU2_W03] has in-depth knowledge of programming paradigms and architectures and advanced programming constructs; knows current trends in programming languages						
	[[INFMU2_U03] can design and analyze for correctness and computational complexity, and build algorithms using advanced programming techniques		knows how to solve programming problems using learned programming methods, tools and paradigms			[SU4] test/exam - oral or written	
<b>Subject contents</b>	<ul style="list-style-type: none"> <li>• Application development using hybrid programming based on the methods object-functional approach.</li> <li>• Creating parallel and distributed systems based on the actor model.</li> </ul>						

Prerequisites and co-requisites	<ul style="list-style-type: none"> <li>• Familiarity with basic programming concepts and constructs of object-oriented languages, such as methods, classes, inheritance.</li> <li>• Familiarity with the Java virtual machine environment (JRE/JDK) and related tools.</li> <li>• Ability to proficiently navigate Windows and Linux operating system environments.</li> </ul>		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	programming colloquia	51.0%	80.0%
	oral exam	51.0%	20.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>• M. Odersky, L. Spoon, B. Venners, F. Sommers, Programming in Scala, Fifth Edition, Artima Press, 2021.</li> <li>• F. Lopez-Sancho, Akka in Action, Second Edition, Manning 2023.</li> </ul>	
	Supplementary literature	<ul style="list-style-type: none"> <li>• M. Pilquist, R. Bjarnason, P. Chiusano, Functional Programming in Scala, Second Edition, Manning 2023</li> </ul>	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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