University of Gdańsk

Subject card

Subject name and code	Advanced Programming Languages, PG_00143891		
Field of study	Informatics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	Master's studies	Subject group	Obligatory subject group in the field of study
Mode of study	part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	7.0
Learning profile	academic	Assessment form	exam
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Wiesław Pawłowski	
	Teachers	dr hab. Wiesław Pawłowski mgr Łukasz Mielewczyk	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	20.0	0.0	0.0	40

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	40	0.0	135.0	175

Subject objectives

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.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[INFMU2_K03] is able and ready to formulate opinions on basic IT issues	has his own opinion on relevant IT issues and recognizes the potential limitations of his own knowledge in this area	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[INFMU2_W03] has in-depth knowledge of programming paradigms and advanced programming constructs; knows current trends in programming languages	knows and can use the most important mechanisms of pure functional programming and selected approaches to parallel and asynchronous programming	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[INFMU2_U03] designs, analyzes for correctness and computational complexity, and builds algorithms using advanced programming techniques and data structures	knows how to solve programming problems using learned programming methods, tools and paradigms	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[INFMU2_W06] is well acquainted with the principles of health and safety in the IT profession	Is able to use the essential elements and tools of the development environment	[SW3] text preparation/written work
[INFMU2_K01] knows the limits of his own knowledge and understands the need for further learning	takes a systematic approach to solving programming problems	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work

<table>
<tr><td>Subject contents</td><td>

- Application development using hybrid programming methods object-functional approach.
- Creating parallel and distributed systems based on the actor model.

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<tr><td>Prerequisites
and co-requisites</td><td>

- Familiarity with basic programming concepts and constructs of object-oriented languages, such as methods, classes, inheritance.
- Familiarity with the Java virtual machine environment (JRE/JDK) and related tools.
- Ability to proficiently navigate Windows and Linux operating system environments.

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<tr><td>Assessment methods
and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>oral exam</td><td>50.0%</td><td>20.0%</td></tr>
<tr><td>programming colloquia</td><td>50.0%</td><td>80.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>

- M. Odersky, L. Spoon, B. Venners, F. Sommers, Programming in Scala, Fifth Edition, Artima Press, 2021.
- F. Lopez-Sancho, Akka in Action, Second Edition, Manning 2023.

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<tr><td>Supplementary literature</td><td>

- M. Pilquist, R. Bjarnason, P. Chiusano, Functional Programming in Scala, Second Edition, Manning 2023

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<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/
example questions/
tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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