

Subject card

Subject name and code	Object Programming, PG_00179796						
Field of study	Mathematical Modeling and Data Analysis						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		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	3		ECTS credits		6.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Stukow				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		0.0		0.0	60
Subject objectives	The aim of the course is to familiarize students with the principles of object-oriented and event-driven programming using the Java language as an example.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[MMiADL3_K02] is ready to precisely formulate questions to deepen his/her own understanding of a given topic or to find missing elements of reasoning		The student is ready to precisely formulate questions that serve to deepen one's understanding of a given topic or to find missing elements of reasoning.		[SK5] implementation of a problem task [SK8] observation of student's independent or team work		
	[MMiADL3_U10] is able to recognise problems, including practical issues, that can be solved algorithmically; can make a specification of such a problem		The student is able to recognize problems, including practical issues, that can be solved algorithmically; is able to specify such a problem.		[SU8] observation of student's independent or team work		
	[MMiADL3_U11] knows how to arrange and analyse an algorithm in accordance with the specification and save it in the selected programming language		The student is able to construct object-oriented solutions to simple programming problems using modern tools supporting software production.		[SU8] observation of student's independent or team work		
	[MMiADL3_W09] knows and understands the basics of computational and programming techniques supporting mathematician's work and understands their limitations		The student knows the basics of object-oriented programming and the basic constructs of the Java language		[SW5] implementation of a problem task		

Subject contents	1. Introduction to basic concepts: class, object, field, method; fields and methods: static, public, and private in Java; initialization and deletion of an object; review of Java control statements and their comparison with statements in other programming languages. 2. Java class packages, hiding implementation: package structure; importing packages; setting access rights to package components; building interfaces and their implementation. 3. Inheritance and polymorphism: inheritance syntax and preserving access rights to inherited fields and methods; from abstraction to concreteness: abstract and final classes; comparison of properties of final and static fields; comparison of properties of overloaded and polymorphic methods; examples of polymorphic function calls. 4. Review of classes implementing typical data structures: the concept of static and dynamic data structures; classes implementing enumerated types and iterators; polymorphic methods enabling sorting of elements. 5. Programming with exceptions: review of predefined exceptions in Java; rules for creating new exceptions; reporting and catching exceptional situations. 6. Programming using threads. 7. Designing graphical interfaces in Java. Event programming. 8. Review of selected design patterns. Generics.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Activity in classes	0.0%	10.0%
	Assignments	51.0%	70.0%
	Egzam	51.0%	20.0%
Recommended reading	Basic literature	1. Eckel B., Thinking in Java edycja polska. Wydawnictwo HELION, Warszawa, 2010. 2. Horstmann C. S., Cornell G., Core Java 2 - Podstawy. Helion, 2010. 3. Horstmann C. S., Cornell G., Core Java 2 - Techniki zaawansowane. Helion, 2010. 4. Campione M., Walrath K., Java Tutorial. Addison-Wesley, 2000.	
	Supplementary literature	N/A	
	eResources addresses		
Example issues/ example questions/ tasks being completed	During the course, we will complete three extensive projects illustrating typical object-oriented constructs in Java.		
Work placement	Not applicable		

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