

Subject card

Subject name and code	Graph Databases, PG_00179322						
Field of study	Informatics						
Date of commencement of studies	October 2024		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 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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Magda Dettlaff				
	Teachers		dr inż. Magda Dettlaff				
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 familiarize the student with graph databases, graph algorithms for analyzing such a database, the Cypher language and the Neo4j working environment.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFL3_U08] has the ability to select the type of database depending on the needs, create an adequate data model and use it to build database applications		the student is able to design, create and analyze a graph database		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		
	[INFL3_W03] has structured, theoretically grounded general knowledge in the field of algorithms and data structures, formal languages, automata theory and computational complexity, and artificial intelligence		the student knows graph algorithms and their application in graph database analysis, can write queries to the database		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report		

Subject contents	cypher queries, aggregate functions, subquery		
	recommendation system using a graph database		
	graph algorithms: importance of the vertex, community detection, shortest paths		
	using the graph approach in database security		
	graph database refactoring		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests	51.0%	30.0%
	project	51.0%	50.0%
	tasks for the laboratory	51.0%	20.0%
Recommended reading	Basic literature	Estelle Scifo, Hands-On Graph Analytics with Neo4j. Perform graph processing and visualization techniques using connected data across your enterprise, Packt Publishing, 2020. ISBN: 1839212616	
	Supplementary literature	Mark Needham, Amy E. Hodler, Graph Algorithms. O'Reilly Media, Inc., 2019. ISBN: 9781492047681	
		Estelle Scifo, Graph Data Science with Neo4j: Learn how to use Neo4j 5 with Graph Data Science library 2.0 and its Python driver for your project, Packt Publishing, 2023, ISBN-10: 180461274,ISBN-13: 978-1804612743	
	eResources addresses		
Example issues/ example questions/ tasks being completed	import data into Neo4j and implement vertex importance algorithms - page rank		
Work placement	Not applicable		

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