



## Subject card

Subject name and code	Advanced nonrelational databases, PG_00045386						
Field of study	Data Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			blended-learning		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Software Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Teresa Zawadzka				
	Teachers		dr inż. Teresa Zawadzka				
Lesson type and method of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	30.0	0.0	75
	E-learning hours included: 15.0						
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	75	5.0		70.0		150
Subject objectives	The aim of the course is to familiarize students with analytical data processing in a distributed Hadoop environment.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U03] analyses problems and creates appropriate models, data structures and algorithms (including heuristic and numerical ones), assesses their computational complexity, estimates errors of the received solutions	The student analyzes the problem of building a data warehouse in a distributed environment and models this warehouse in an appropriate tool.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K6_W07] Knows the methods of information processing, storage, extraction of data stored in various models including: relational, graph and document ones	The student knows the methods of processing analytical queries in the Hadoop environment.			[SW1] Assessment of factual knowledge		
	[K6_W04] Knows the architecture of computers, operating system processes, file systems, text processing programs, disk and ram memories management rules. Knows the problems of sharing the state, presentation and transformation of information in a distributed system, hypermedia technologies and related services, the architecture of interactive distributed simulation and agent interaction methods.	The student knows the Hadoop file system and arhitecture of analytical tools for processing data in this system stored.			[SW1] Assessment of factual knowledge		
Subject contents	1. Introduction to the Hadoop system. 2. HIVE as a data warehouse. 3. Kylin as a data warehouse.						

Prerequisites and co-requisites	Knowledge of relational databases.  Basics of the Linux system.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam Hadoop	50.0%	10.0%
	Exam Hive	50.0%	20.0%
	Project	50.0%	30.0%
	Work during workshops	50.0%	20.0%
	Exam Kylin	50.0%	20.0%
Recommended reading	Basic literature	1. Apache Hive Cookbook, Hanish Bansal, Saurabh Chauhan, Shrey Mehrotra, Publisher: Packt Publishing, Release Date: April 2016 2. Apache Kylin, <a href="http://kylin.apache.org/docs/">http://kylin.apache.org/docs/</a> 3. Apache Hive, <a href="https://hive.apache.org/">https://hive.apache.org/</a>	
	Supplementary literature	1. Cloudera documentation, <a href="https://www.cloudera.com/products/open-source/apache-hadoop/apache-hive.html">https://www.cloudera.com/products/open-source/apache-hadoop/apache-hive.html</a> .	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Build a data warehouse in the Hive tool 2. Set some tables as external. 3. Design at least two partitions. 4. Design a data warehouse in the Kylin tool.		
Work placement	Not applicable		