

Subject card

Subject name and code	NoSQL Solutions, PG_00178056						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2025		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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		5.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Business Informatics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Patrycja Krauze-Maślankowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	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		4.0		61.0	125
Subject objectives	familiarizing students with the principles of designing non-relational databases,preparing students to use a non-relational database management system,preparing students to write software that uses unstructured databases.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEL3_W05] To an advanced degree, the student knows and understands the methods, techniques and informatics or statistics tools used to acquire, collect, process and present data in decision-making processes.	Possesses knowledge of existing non-relational database technologies and is able to align them with specific user needs. Knows how to match the appropriate type of non-relational database to solve a given problem and understands classifications related to diverse non-relational database technologies.	[SW4] test/exam - oral or written
	[liEL3_U12] The student can design and implement IT systems to enhance business operations and effectively utilize modern ICT technologies for management and business communication.	Is able to establish new databases with collections of unstructured documents. Is able to write advanced scripts to explore data from nonrelational databases. Is able to write software that uses nonrelational databases.	[SU2] presentation/project/paper/report [SU5] implementation of a problem task
	[liEL3_U03] Students can obtain data from appropriately selected sources, use these data to solve economic and social problems, and process and interpret them using econometrics, informatics or statistics tools.	Is able to ensure data security in databases, particularly regarding personal data protection and database security. Is able to demonstrate creativity in selecting database technologies for applications in business and administrative organizations.	[SU2] presentation/project/paper/report
Subject contents	Introduction to Non-Relational Databases (1h) Document, Graph, Key-Value and Columnar Databases (2h) Non-Relational Database Models and Software Overview (3h) Create, Select, Update and Delete Commands (3h) Big Data Solutions for Non-Relational Databases Machine Learning, Data Classification, Web Scraping (6h) Database Creation, JSON Document Structure and Characteristics (2h) Collection and Document Creation Instructions, Data Field Definition, Data Types (2h) Nested Documents, Document Indexing (2h) Importing and Exporting Data Between Relational, Non-Relational and Semi-Structured Systems and Internet Data Sources Web Scraping and Social Media (4h) Data Quality Aspects in Non-Relational Databases Data from Websites, Social Media and Data Deduplication (2h) Content Classification in Non-Relational Databases (3h) Using Big Data solutions in non-relational databases - case studies including web scraping, social media, machine learning (30h)		
Prerequisites and co-requisites	Knowledge of how relational databases or spreadsheets work.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture knowledge test	51.0%	40.0%
	colloquium - problem solving	51.0%	40.0%
	project - database system	51.0%	20.0%

Recommended reading	Basic literature	1. Wrycza S., Maślankowski J. (red.) Informatyka ekonomiczna. Teoria i zastosowania., PWN, 2019 (rozdział Bazy danych. Big Data.) 2. Guy H., NoSQL, NewSQL i BigData. Bazy danych następnej generacji, Helion, 2019 3. Materials on PE UG: http://pe.ug.edu.pl.
	Supplementary literature	1. Documentation MongoDB (http://mongodb.com) 2. Documentation Elasticsearch (https://www.elastic.co/guide/index.html) 3. Documentation Python (http://python.org) 4. Documentation Java (https://docs.oracle.com/en/java/) 5. Bierer D., Learn MongoDB 4.x: A guide to understanding MongoDB development and administration for NoSQL developers, Packt Publishing, 2020 6. Sadalage P.J., Fowler M., NoSQL. Kompendium wiedzy, Helion, 2015 7. Sullivan D., NoSQL. Przyjazny przewodnik, Helion, 2015
	eResources addresses	
Example issues/ example questions/ tasks being completed	List the types of non-relational databases What architecture is used in non-relational database systems	
Work placement	Not applicable	

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