University of Gdańsk

Subject card

Subject name and code	NoSQL Databases , PG_00136716						
Field of study	Nierelacyjne rozwiązania bazodanowe						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2025/2026			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study 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	6.0			
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 Jacek Maślankowski				
	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		20.0	70.0	150	
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
[IiEL3_U02] The student is able to acquire basic information about economic processes and phenomena by direct observation, planned experiment or database queries, and collect and process it using modern information technology tools.	Establishes new databases with collections of unstructured documents. Writes advanced scripts to explore data from nonrelational databases. Writes software that uses nonrelational databases.	[SU2] prezentacja/projekt/referat/ raport
[IiEL3_K03] The student can work in, co-create and manage a team; adapts his/her behavior and conduct to his/her role in it; is ready to take responsibility for the team and bear the consequences; understands the necessity of regularity and consistency in action; is open to other team members and critical of himself.	Is familiar with the issues of data security in databases, especially in the area of personal data protection and database protection. Demonstrates creativity in selecting database technologies for applications in business and administrative organizations.	[SK2] prezentacja/projekt/referat/ raport
[IiEL3_U04] The student can plan, design and program information systems to support the functioning of economic entities.	Establishes new databases with collections of unstructured documents. Writes advanced scripts to explore data from nonrelational databases. Writes software that uses nonrelational databases.	[SU2] prezentacja/projekt/referat/ raport
[IiEL3_U08] The student can configure and apply advanced modern information and communication technologies in the process of business management and business communication.	Establishes new databases with collections of unstructured documents. Writes advanced scripts to explore data from nonrelational databases. Writes software that uses nonrelational databases.	[SU2] prezentacja/projekt/referat/ raport
[IiEL3_W05] The student has advanced knowledge of the sources of socio-economic data, their databases and ways of creating them.	Has knowledge of existing non-relational database technologies and is able to match them to specific user needs. Can match the appropriate type of non-relational database to solve a specific problem. Knows the classifications associated with various non-relational database technologies.	[SW4] test/egzamin - ustny lub pisemny
[IiEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	Has knowledge of existing non-relational database technologies and is able to match them to specific user needs. Can match the appropriate type of non-relational database to solve a specific problem. Knows the classifications associated with various non-relational database technologies.	[SW4] test/egzamin - ustny lub pisemny

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
colloquium - problem solving	51.0%	40.0%
project - database system	51.0%	20.0%
exam - test	51.0%	40.0%

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 databasesWhat architecture is used in non-relational database systems	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.