GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Databases and data warehouses, PG_00062741		
Field of study	Technologies for Industry 5.0		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	first-cycle 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	4	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Physics and Applied Computer Science -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bartosz Reichel	
	Teachers	dr inż. Bartosz Reichel	

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	2.0	18.0	50

Subject objectives

Acquiring knowledge and skills related to relational and non-relational databases, as well as data warehouses.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] performs analysis, exploration and cleaning of data sets, can use statistical models and machine learning models, integrate various analytical, management and data storage tools	The student analyzes, explores, and transforms data sets using relational and non-relational databases, and is able to integrate various data analysis, management, and storage tools using data warehouses.	[SU1] Assessment of task fulfilment
[K6_W06] demonstrates knowledge related to data analysis and engineering, machine learning, knows the principles of integrating data with management systems to analyze complex engineering and technological problems	The student demonstrates knowledge of relational and non-relational databases and data warehouses in order to analyze complex engineering and technological problems.	[SW1] Assessment of factual knowledge

Subject contents	Course content – lecture Introduction to Databases (2 hours) Examples of popular database systems.Relational Databases and SQL (6 hours) Relational Database Extensions (3 hours) NoSQL Databases as Exemplar of MongoDB (4 hours) Aggregations and Queries in MongoDB.Data Warehouses (4 hours) ETL (Extract, Transform, Load) process (4 hours) Dimensions in a data warehouse (3 hours) Data analysis (4 hours)
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	60.0%	50.0%
laboratory test	60.0%	50.0%

Recommended reading	Basic literature	Walter Shields, SQL. Przewodnik dla początkujących. Jak zacząć efektywną pracę z danymi, Helion Jun Shan, Matt Goldwasser, Upom Malik, Benjamin Johnston, SQL dla analityków danych. Opanuj możliwości SQL-a, aby wydobywać informacje z danych., Wydanie III, Helion Shannon Bradshaw, Eoin Brazil, Kristina Chodorow, Przewodnik po MongoDB. Wydajna i skalowalna baza danych., Wydanie III, Helion Adam Pelikant, Hurtownie danych. Od przetwarzania analitycznego do raportowania., Wydanie II, Helion
	Supplementary literature	Jamie Chan, Learn SQL using MySQL in One Day and Learn It Well. SQL for beginners with Hands-on Project, Packt Publishing Alkin Tezuysal, Ibrar Ahmed, Peter Zaitsev, Database Design and Modeling with PostgreSQL and MySQL. Build efficient and scalable databases for modern applications using open source databases, Packt Publishing Brij Kishore Pandey, Emily Ro Schoof, Building ETL Pipelines with Python. Create and deploy enterprise-ready ETL pipelines by employing modern methods, Packt Publishing Nagaraj Venkatesan, Ahmad Osama, Azure Data Engineering Cookbook. Get well versed in various data engineering techniques in Azure using this recipe-based guide, Second Edition, Packt Publishing
	eResources addresses	
Example issues/ example questions/ tasks being completed		

Practical activites within the subject	Not applicable

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