GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Data warehouses, PG_00064166		
Field of study	Data Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
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	blended-learning
Year of study	3	Language of instruction	English
Semester of study	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
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 types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	45
E-learning hours included: 13.0						

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	45	8.0	47.0	100

Subject objectives

The aim of the course is introduction the student to data warehouse concepts, to applications and design of data warehouses, as well as to methods of querying a data warehouse. The student also gets knowledge how to use business *inteligence tools*.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] develops innovative solutions for data analysis and processing, using appropriate methods and tools	The student designs Business Intelligence solutions based on Ralph Kimball's architecture.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K6_W05] integrates data from multiple sources in order to analyze complex business problems	The student can design and implement ETL (Extract, Transform, and Load) processes for data warehouses from data sources with various structures.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K6_K03] demonstrates the ability to think critically and analytically and integrates knowledge from many disciplines in order to make effective decisions	The student can analyze business processes to provide Business Intelligence solutions. In addition, the student can analyze data generated during the execution of business processes to determine their completeness for business analyses.	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents	1. Basic concepts of data warehousing 2. Multi-dimensional data model in data warehouses. Categorical and hierarchical dimensions. 3. The star schema and the snowflake schema. Constelation schema. 4. Basic operations on OLAP cubes. 5. Memory models in data warehouses 6. The architecture of business intelligent solutions. 7. The rules for creating a data warehouse. 8. MDX language simple and advanced queries 9. ETL (Extract, Transform, Load) processes 10. Reporting systems
Prerequisites and co-requisites	Basic database course completed
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	50.0%	50.0%
lab	50.0%	50.0%

Recommended reading	Basic literature	W.H. Inmon: Building the Data Warehouse. J. Wiley&Sons, R. Kimball: Data Warehouse Toolkit. J. Wiley&Sons, P. Ponniah: Data Warehousing. J. Wiley&Sons, . K. Goczyła. T. Zawadzka. "Data Warehousing". Lecture materials. V. Poe, P. Klauer, S. Brebst: Tworzenie hurtowni danych, WNT
	Supplementary literature	None
	eResources addresses	Adresy na platformie eNauczanie: Data warehouses 2026/2027 - Moodle ID: 42574 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=42574

Example issues/ example questions/ tasks being completed	1. Design a data warehouse according to guidelines specified 2 Develop a data warehouse and test its functioning 3. Explain the differences between OLAP and OLTP processing 4. Specify the most important features of a data warehouse 5. What is the difference from the star schema and the snowflake schema? 6. Explain extensions of SQL for OLAP processing. 7. What is the ETL process?
Work placement	Not applicable

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