GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Databases, PG_00045301		
Field of study	Data Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
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	English
Semester of study	3	ECTS credits	4.0
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	prof. dr hab. inż. Krzysztof Goczyła	
	Teachers	dr inż. Aleksandra Karpus dr hab. inż. Agnieszka Landowska prof. dr hab. inż. Krzysztof Goczyła	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	15.0	0.0	45

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	45	8.0	47.0	100

Subject objectives

The aim of the course is introduction the student to functions of a database management system, to the rules of relational database desing and to construction of SQL statements.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W07] Knows the methods of information processing, storage, extraction of data stored in various models including: relational, graph and document ones	The student is able to design and to normalize a relational database, as well as how to query it using SQL.	[SW1] Assessment of factual knowledge
[K6_U01] programs in procedural, object, functional and logic programming languages, codes programs at the processor instruction level, runs and tests programs.	The student is able to evaluate the quality of an SQL statement and knows how to test and tune it	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents	1. Architecture of database systems 2. The functions of database management system 3. Entity sets, attributes of entities, keys of entities, relationships 4. Entity Relationship Diagram (ERD) basics concepts 5. Creating entity relationship diagrams 6. Relational database - definitions, integrity constraints 7. From an entity relationship diagram to a relational database schema 8. Fundamentals of relational algebra 9. Review of SQL language, SQL standards 10. Creating tables and inserting data 11. Simple queries with expressions 12. Queries using aggregate functions and grouping 13. Queries with joins 14. Nested queries 15. Queries for update, delete and mass insert 16. Views, operations on views 17. Normalization of relational databases 18. Identification, authentication and authorization of users
Prerequisites and co-requisites	No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
project	50.0%	25.0%
exam	50.0%	50.0%
lab	50.0%	25.0%

Recommended reading	
Basic literature	P. Beynon-Davies. "Database Systems". WNT 2000. C.J.Date. "Introduction to database systems". Wiley, 2000. M.Gruber. "SQL", 2nd Edition. Helion 2000 K.Goczyła. "Databases". Lecture materials. Gdańsk.
Supplementary literature	None

	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40148 - Lecture materials, project and lab instructions Adresy na platformie eNauczanie: Databases (Data Engineering) - 2024 - Moodle ID: 40148 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40148
Example issues/ example questions/ tasks being completed	1. Construct an entity relationship model for an example real-life case 2. Construct and create a relational database 3. Formulate a query to a relational database 4. Specify the operators of relational algebra 5. Give reasons for violation of the second and third normal form 6. Normalize a sample database	
Work placement	Not applicable	

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