GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Databases, PG_00058851		
Field of study	Informatics		
Date of commencement of studies	October 2025	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	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geoinformatics -> Faculty of Electronics Telecommunications and Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Zbigniew Łubniewski	
	Teachers	dr hab. inż. Zbigniew Łubniewski	
		dr inż. Marek Kulawiak	
		mgr inż. Tomasz Idzi	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	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	6.0	74.0	125

Subject objectives	To familiarize students with creating and management of relational databases .

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W03] knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	Student knows the pronciples of construction and operation of computer systems.	[SW1] Assessment of factual knowledge
	[K6_U07] can apply methods of process and function support, specific to the field of study	Student is able to adequately design a secure database system, depending on the specific needs of the user.	[SU2] Assessment of ability to analyse information

Subject contents	1. Database system architecture
	2. Functions of a Database Management System (DBMS)
	3. Entity sets, entity attributes, entity keys, relationships
	4. Entity relationship diagrams (ERDs) - general concepts
	5. Creating entity relationships diagrams 6. Ralational database - definitions
	7. Integrity rules: enitity integrity, referential integrity
	8. From an entity relationship diagram to a relational database schema
	9. Relational algebra: set-theoretic operators
	10. Relational algebra: relational operators
	11. SQL - an overview, origins, standards
	12. Creating tables
	13. Populating tables with data
	14. Simple queries
	15. SQL expressions - simple and conditional
	16. Queries with aggregate functions
	17. Queries with grouping
	18. Queries with joins
	19. Queries with outer joins
	20. Nested queries
	21. Queries for UPDATEs, deletes and bulk inserts
	22. Views, operations on views, updatable views
	23. Cursors, sequential processing of query results
	24. Normalization of relational databases: 2nd and 3rd normal form
	25. Boyce-Codd normal form
	26. Normalization of relational databases: 4th and 5th normal form

	27. Transactional processing in databases - basics
	28. Isolation levels in transactions
	29. Transactional processing and SQL standards
	30. Rules for development of correct database applications in concurrent environments
	31. Identification, authenticatrion and authorization in databases
	32. Authorization of SQL operations on data: views, GRANT and REVOKE statements

Prerequisites and co-requisites	No requirements		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	50.0%	40.0%
	Written test	50.0%	50.0%
	Presence	0.0%	10.0%

Recommended reading	Basic literature	P. Beynon-Davies. "Systemy baz danych". WNT 2000.
		C. J. Date. "Wprowadzenie do systemów baz danych". WNT 2000.
		M. Gruber. "SQL", wydanie drugie. Helion 2000
	Supplementary literature	K. Goczyła, A. Landowska, M. Piechówka. "Bazy danych". Materiały do wykładu. Gdańsk, 2009
	eResources addresses	

Example issues/ example questions/ tasks being completed	Creating a relational database schema based on the entity relationship diagram.
	Verification normal form of the database.
	Developing SQL commands for creating and modifying objects in a relational database.
	Developing SQL commands to obtain data from a relational database.

Work placement	Not applicable

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