University of Gdańsk

Subject card

Subject name and code	Databases, PG_00178482		
Field of study	Informatics and Econometrics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
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	part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	6.0
Learning profile	academic	Assessment form	exam
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	8.0	0.0	24.0	0.0	0.0	32

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	32	2.0	116.0	150

Subject objectives

familiarizing students with a comprehensive approach to database design,preparing students to use a database management system,preparing students to write database scripts in SQL.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEL3_W05] To an advanced degree, the student knows and understands the methods, techniques and informatics or statistics tools used to acquire, collect, process and present data in decision-making processes.	Has knowledge of existing database technologies, data models and IT tools to build and manage databases.	[SW4] test/exam - oral or written
[IiEL3_U03] Students can obtain data from appropriately selected sources, use these data to solve economic and social problems, and process and interpret them using econometrics, informatics or statistics tools.	Has skills about database security issues. Demonstrates creativity in selecting database technologies for specific applications in business and administrative organizations.	[SU2] presentation/project/paper/ report
[IiEL3_U12] The student can design and implement IT systems to enhance business operations and effectively utilize modern ICT technologies for management and business communication.	Writes advanced database scripts in T-SQL. Optimizes database queries using dynamic SQL. Writes SQL programs in the form of procedures and functions based on previously prepared requirements.	[SU5] implementation of a problem task

Subject contents	1) Introduction to databases: types of databases. The concept of creating tables, primary keys, foreign keys, one-one, one-many and many-many relationships, joining tables. Mandatory and optional relationships.2) Designing tables based on received data attributes. Introduction to ERD: types of diagrams and their components.3) Introduction to SQL, create, update, select and delete statements.4) Data normalization. Differences between 0NF, 1NF, 2NF and 3NF. Transition to third normal form. Normalizing data based on received company case descriptions. The concept of normalization to 4NF and 5NF.5) Database tools - importing and exporting data based on various file formats.6) Basics of SQL: CREATE, INSERT, SELECT statements and sequences. Creating tables. Inserting data into tables. Primary keys and foreign keys. Using the CONSTRAINT expression to define restrictions on entered data.7) SELECT statement syntax displaying data from tables.8) SELECT statement conditions, expressions and operators. Comparison, arithmetic and string concatenation operators. WHERE condition. Synonyms of tables and columns.9) SELECT statement with BETWEEN and CASE WHEN conditional expressions.10) Using SOME, ANY and IN expressions.11) SELECT statement aggregate functions. GROUP BY statement with HAVING expressions.12) SELECT statement creating advanced reports using grouping statements. Sorting data using ORDER BY statement. 13) Creating views CREATE VIEW statement.14) ALTER statement modifying permissions.15) Users and groups, permissions to objects.16) Database backups and recovery.17) Procedures, functions and triggers in databases.Modeling databases based on received company case descriptions case studies.
Prerequisites and co-requisites	Knowledge of how databases or spreadsheets work; knowledge of data-based reporting.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
colloquium - exercises	51.0%	25.0%
exam - test	51.0%	35.0%
students activity during classes	51.0%	10.0%
project - database	51.0%	30.0%

Recommended reading

Basic literature	1. Wrycza S., Maślankowski J. (red.) Informatyka ekonomiczna. Teoria i zastosowania., PWN, 2019 (rozdział Bazy danych. Big Data.) 2. Balter A., T-SQL dla każdego, Helion, 2016 3. Documentation Transact-SQL Reference (Transact-SQL), http://msdn.microsoft.com 4. Materials on UG: http://pe.ug.edu.pl. 5. Documentation MS SQL Server: https://learn.microsoft.com/en-us/sql/sql-server/?view=sql-server-ver16
Supplementary literature	1. Ward B., Odsłaniamy SQL Server 2019, APN Promise, 2020 2. Molinaro A., Graaf R., SQL. Zapytania i techniki dla bazodanowców, Helion, 2021 3. Mistry S., Microsoft SQL Server 2012. Management and Administration, Pearson, 2013 4. Brust A., Lobel L.G., Programming Microsoft SQL Server 2012 (Developer Reference), O'Reilly, 2012 5. Brust A., Lobel L., Microsoft SQL Server 2012. Podstawy języka T-SQL, Wydawnictwo Helion, Gliwice, 2010
eResources addresses	

Example issues/ example questions/ tasks being completed	Exam test form in the form of open and multiple choice questions. Colloquium independent solution of a problem posed by the instructor (SQL queries). Database project in accordance with the requirements posed by the instructor, including database diagrams, data normalization, database scripts. Student activity during classes points earned for correct solution of the posed problems.
Work placement	Not applicable

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