

**Subject card**

<b>Subject name and code</b>	Databases, PG_00178050						
<b>Field of study</b>	Informatics and Econometrics						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2026/2027		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	1	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	2	<b>ECTS credits</b>			6.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			exam		
<b>Conducting unit</b>	Department of Business Informatics -> Faculty of Management -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr Jacek Maślankowski				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	15.0	0.0	45.0	0.0	0.0	60
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM		
	<b>Number of study hours</b>	60	4.0	86.0	150		
<b>Subject objectives</b>	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.						
<b>Learning outcomes</b>	<b>Course outcome</b>	<b>Subject outcome</b>			<b>Method of verification</b>		
	[[i]IEL3_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		
	[[i]IEL3_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		
	[[i]IEL3_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 data bases.			[SW4] test/exam - oral or written		

Subject contents	<p>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 different 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.18) Modeling databases based on received company case descriptions case studies.</p>																	
Prerequisites and co-requisites	Knowledge of how databases or spreadsheets work; knowledge of data-based reporting.																	
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>project - database creation</td> <td>51.0%</td> <td>30.0%</td> </tr> <tr> <td>colloquium - exercises</td> <td>51.0%</td> <td>25.0%</td> </tr> <tr> <td>exam - test</td> <td>51.0%</td> <td>35.0%</td> </tr> <tr> <td>student's activity</td> <td>51.0%</td> <td>10.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	project - database creation	51.0%	30.0%	colloquium - exercises	51.0%	25.0%	exam - test	51.0%	35.0%	student's activity	51.0%	10.0%
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Recommended reading	<p>Basic literature</p>	<ol style="list-style-type: none"> <li>1. Wrycza S., Maślankowski J. (red.) Informatyka ekonomiczna. Teoria i zastosowania., PWN, 2019 (rozdział Bazy danych. Big Data.)</li> <li>2. Balter A., T-SQL dla każdego, Helion, 2016</li> <li>3. Documentation Transact-SQL Reference (Transact-SQL), <a href="http://msdn.microsoft.com">http://msdn.microsoft.com</a></li> <li>4. Materials on UG: <a href="http://pe.ug.edu.pl">http://pe.ug.edu.pl</a>.</li> <li>5. Documentation MS SQL Server: <a href="https://learn.microsoft.com/en-us/sql/sql-server/?view=sql-server-ver16">https://learn.microsoft.com/en-us/sql/sql-server/?view=sql-server-ver16</a></li> </ol>																
	<p>Supplementary literature</p>	<ol style="list-style-type: none"> <li>1. Ward B., Odślaniamy SQL Server 2019, APN Promise, 2020</li> <li>2. Molinaro A., Graaf R., SQL. Zapytania i techniki dla bazodanowców, Helion, 2021</li> <li>3. Mistry S., Microsoft SQL Server 2012. Management and Administration, Pearson, 2013</li> <li>4. Brust A., Lobel L.G., Programming Microsoft SQL Server 2012 (Developer Reference), O'Reilly, 2012</li> <li>5. Brust A., Lobel L., Microsoft SQL Server 2012. Podstawy języka T-SQL, Wydawnictwo Helion, Gliwice, 2010</li> </ol>																
	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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