



Subject card

Subject name and code	Databases, PG_00045301						
Field of study	Data Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
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. Michał Wróbel 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_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		
	[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		

Subject contents	<ol style="list-style-type: none"> 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	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Subject passing criteria</th> <th style="width: 33%;">Passing threshold</th> <th style="width: 33%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>lab</td> <td>50.0%</td> <td>25.0%</td> </tr> <tr> <td>exam</td> <td>50.0%</td> <td>50.0%</td> </tr> <tr> <td>project</td> <td>50.0%</td> <td>25.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	lab	50.0%	25.0%	exam	50.0%	50.0%	project	50.0%	25.0%
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Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none">1. Construct an entity relationship model for an example real-life case2. Construct and create a relational database3. Formulate a query to a relational database4. Specify the operators of relational algebra5. Give reasons for violation of the second and third normal form6. Normalize a sample database
Work placement	Not applicable