



Subject card

Subject name and code	Databases, PG_00045301						
Field of study	Data Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024		
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 Goczyla				
	Teachers		dr hab. inż. Agnieszka Landowska				
			dr inż. Aleksandra Karpus				
			mgr inż. Małgorzata Pykała				
			prof. dr hab. inż. Krzysztof Goczyla				
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	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
	lab	50.0%	25.0%
	exam	50.0%	50.0%
	project	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.Goczyla. "Databases". Lecture materials. Gdańsk.	
	Supplementary literature	None	

	eResources addresses	Adresy na platformie eNauczenie: Databases (Data Engineering) - 2023 - Moodle ID: 30715 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=30715
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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