GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Databases applications, PG_00047735					
Field of study	Biomedical Engineering					
Date of commencement of studies	October 2023		Academic year of realisation of subject		2023/2024	
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study	
Mode of study	Full-time studies		Mode of delivery		at the university	
Year of study	1		Language of instruction		Polish	
Semester of study	2		ECTS credits		4.0	
Learning profile	general academic profile		Assessment form		assessment	
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics, Telecommunications and Informatics					
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Adam Bujnowski			
	Teachers		mgr inż. Magdalena Madej			
			mgr inż. Natalia Szarwińska			
			dr inż. Adam Bujnowski			

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30	10.0	60.0	100

Subject objectives	Basic terms: database, data model, database management system. Fundamental data models - flat file, hierarchical, networking and relational data models. Designing of the relational databases. Management of the databases using SQL. Relational algebra. Functions, triggers in the modern DBMS. Transactions. Connection to the database from procedural languages.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Student knows how to use the SQL language to design and manage the database Student knows how to connect the data from database to selected high level langu	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
	[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Student knows and identified data models Stundent knows how to design realtional databases	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents	Principal terms - data, information, knowledge, database, DBMS, data model. Lauered model of database system, Datamodel vs data structure, Flat databases, Relatron between entites, hierarchical model, network data model, XML as a hierarchical database, Relational data model - structure of the data, Data integrity in relational databases, Graphical notations of the RDB structure, Normalisation, Designing of the relational databases, SQL - genesis, usage of the SQL, classification. Data definition language, Data types in SQL, Data manipulation language, tuple selection statements, SELECT - data retrieval, SQL - privileges , user and database management, Aggregate functions, User defined functions, triggers, transactions, additional SQL forms - comments , Backup copies of the data, Data access methods - using procedural languages. Object data model.

Prerequisites and co-requisites	Basic computing C/C++ programming Work in the unix shell

Assessment methods and criteria		

Subject passing criteria	Passing threshold	Percentage of the final grade
Final writen test	50.0%	40.0%
Laboratory score	50.0%	60.0%

Recommended reading	Basic literature	Davies, Systemy baz danych Matthews Stones, Bazy danych i PostgreSQL od podstaw Rumiński, Bujnowski, Skrypt do przedmiotu,
	Supplementary literature	Sharon Allen , Projektowanie baz danych, Helion www.postgresql.org
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Design database structure for the book shop Implement the database in SQL, manage data, analuse data by means of the relational algebra and agregate functions Create web-based interface for the database using PHP language

Work placement	Not applicable