GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Databases Basics, PG_00047534		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	2.0
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	dr Tomasz Neumann 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	2.0	18.0	50

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_W01] knows and understands, to an advanced extent, mathematics necessary to formulate and solve simple issues related to the field of study	Studeny knows basics of mathematical set theory Student applies basic operations on sets	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[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 basics of the SQL language Studena applies SQL statements within languages like C/C++ and PHP	[SW3] Assessment of knowledge contained in written work and projects
[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	Student knows and identified data models Stundent knows how to design realtional database	[SU1] Assessment of task fulfilment

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 skills in computing.

Programming in C/C++

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory achievements	50.0%	60.0%
final writting	50.0%	40.0%

Recommended reading

Basic literature	Davies, Database systems Matthews Stones, Databases and PostgreSQL Rumiński, Bujnowski,
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 the dayabase structure of .... (shop / libraty etc...)

Using the SQL language implement database, manage data and analuse data with result presentation

Using PHP and www technology create the interface to the database

Work placement

Not applicable