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 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	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_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	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
[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	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic computing

C/C++ programming

Work in the unix shell</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory score</td><td>50.0%</td><td>60.0%</td></tr>
<tr><td>Final writen test</td><td>50.0%</td><td>40.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Davies, Systemy baz danych

Matthews Stones, Bazy danych i PostgreSQL od podstaw

Rumiński, Bujnowski, Skrypt do przedmiotu,</td></tr>
<tr><td>Supplementary literature</td><td>Sharon Allen , Projektowanie baz danych, Helion

www.postgresql.org</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>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</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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