



Subject card

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|---|--|--|--|-------------------------------------|---|------------|-----|
| Subject name and code | Databases applications, PG_00047735 | | | | | | |
| Field of study | Biomedical Engineering | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2021/2022 | | |
| 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 | | dr inż. Adam Bujnowski mgr inż. Natalia Kowalczyk | | | | |
| 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 Student knows how to design relational 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. Layered model of database system, Datamodel vs data structure, Flat databases, Relation between entities, 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 | <table border="1" data-bbox="451 595 1487 696"> <thead> <tr> <th data-bbox="451 595 798 629">Subject passing criteria</th> <th data-bbox="805 595 1141 629">Passing threshold</th> <th data-bbox="1149 595 1487 629">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 629 798 663">Final written test</td> <td data-bbox="805 629 1141 663">50.0%</td> <td data-bbox="1149 629 1487 663">40.0%</td> </tr> <tr> <td data-bbox="451 663 798 696">Laboratory score</td> <td data-bbox="805 663 1141 696">50.0%</td> <td data-bbox="1149 663 1487 696">60.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | Final written test | 50.0% | 40.0% | Laboratory score | 50.0% | 60.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | | | | |
| Final written 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 | | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | Design database structure for the book shop Implement the database in SQL, manage data, analyse data by means of the relational algebra and aggregate functions Create web-based interface for the database using PHP language | | | | | | | | | | | |
| Work placement | Not applicable | | | | | | | | | | | |