SYLLABUS

Name: Data collection and processing methods
Name in Polish: Metody gromadzenia i przetwarzania danych
Name in English: Data collection and processing methods

Information on course:

Course offered by department:	Faculty of Organisation and Management
Course for department:	Silesian University of Technology
Study level and form:	Master's degree, Full-time
Term:	winter semester 2023/2024
Coordinator of course edition:	Dr inż. Krzysztof Herman

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma.polsl.pl/roz/ course/view.php?id=795

ECTS

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Short description:

The goal of the course is to teach students how to use relational databases in a client-server setup, including configuring, creating SQL queries, and building their own databases. The course also covers non-relational (NoSQL) databases and involves hands-on practice with tools like XAMPP, MySQL, MariaDB, Heidi, and phpMyAdmin.

Description:

Lectures:
Database Definition. Relational Databases. Database Management Systems. Structure of a Relational Database: Fields and Field Types, Tables, Keys, Relationships. Normal Forms in Relational Databases. Basic Database Security Issues. Introduction to SQL. SELECT Queries. INSERT Queries. UPDATE Queries. CREATE Queries. Fundamentals of Database Design. NoSQL Databases.
Laboratory:
Creating a Sample Database Using a Chosen Database Management System (DBMS). Utilizing XAMPP Platform. Creating Tables, Relationships, Primary Keys, Foreign Keys, Database Normalization. Writing Basic SQL Queries (Select, Insert, Update, Create). Importing a Database into a Chosen DBMS Environment.
Project:
Completion of a Comprehensive Task Divided into Subtasks: Task Analysis and Needs Identification. Proposal of Database Structure. Database Design. Implementation of the Database in the Environment. Designing Sample Queries and Views to Perform Typical Actions with the Designed Database.

Bibliography:

1. R. Elmasari, S. Navathe : Wprowadzenie do systemów baz danych. Wydanie VII. Helion 2019
2. K. Czapla : Bazy danych. Podstawy projektowania i języka SQL. Helion 2015
3. A. Pelikant : Bazy danych. Pierwsze starcie. Helion 2012

Learning outcomes:

The student is familiar with and understands selected topics related to relational databases, particularly methods of data analysis and reporting. They are acquainted with non-relational database solutions (K2A_W04; K2A_W10).
The student can construct a model of a relational database, utilize appropriate software to create a relational database, and use SQL language to solve research problems (K2A_U02, K2A_U06, K2A_U07).
The student is aware of changes in the field of databases and the responsibility for data accuracy and analysis results (K2A_K05).

Assessment methods and assessment criteria:

Lectures: max 60 points (second exam session max 40 points, third exam session max 20 points - exam in the form of a test).
Laboratory: max 20 points.
Project: max 20 points.
The total points will be converted into a final grade.

(5.0) Excellent – 90-100 points (4.5) Very Good Plus – 80-89 points (4.0) Very Good – 70-79 points (3.5) Good Plus – 60-69 points (3.0) Good – 50-59 points
Practical placement: