COURSE DESCRIPTION CARD - SYLLABUS

Course name
Industrial Database Systems [N2AiR1-ISAiR>PSBD]

Course

Field of study
Automatic Control and Robotics

Year/Semester
1/2

Area of study (specialization)
Intelligent Control and Robotic Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
10

Laboratory classes
10

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points
2,00

Coordinators

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Lecturers

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Prerequisites

The student starting this subject should have a basic knowledge of the basics of programming, computer system architecture and operating systems. He should also be able to obtain information from specified sources and be willing to cooperate as part of a team.

Course objective

The aim of the course is to familiarize students with the basic concepts and concepts of database system technologies necessary for the correct design, use and implementation of database systems and their applications in industry. As part of this subject, students will learn mainly about the basic principles of database modeling and design, the relational data model, the standard language of SQL databases, and logical data organization and basic physical data structures used in database systems.

Course-related learning outcomes

Knowledge
K2_W3, K2_W13
- has detailed knowledge about the assumptions of the relational data model (data structures, operations and integrity constraints).

- has knowledge about the principles of designing relational databases
- has knowledge about the implementation of relational databases in SQL
Skills
K2_U1, K2_U2
- has the ability to design and build simple database systems using at least one of the most popular database management systems.
- can make implementation in SQL.
Social competences
K2_K2, K2_K5
- understands that knowledge and skills in the field of databases require constant development due to the rapid development of techniques used in databases

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Skills acquired as part of the laboratory are verified on the basis of the test, which is assessed at a maximum of 10 points. The pass threshold includes obtaining 50% points. Knowledge acquired as part of the subject is verified during subsequent laboratory classes, during which students perform tasks related to the issues presented in subsequent lectures.

Programme content

The scope of lectures includes an introduction to the SQL language. SQL command groups, general command syntax, basic data search command, SELECT clause, row selection using the WHERE clause, ordering of query results using the ORDER BY clause will be discussed and presented. Next, the basic functions operating on single lines (character, number and date functions), aggregate calculation functions (SUM, MIN, MAX, AVG, COUNT) will be discussed. As part of the subject will be presented: equality, unequal connections, external connections and recursive connections (table with itself). In addition, ordinary and correlated subqueries and data manipulation language (DML) will be discussed and presented, enabling insertion, modification and deletion of data from tables. The INSERT, UPDATE and DELETE commands will be discussed. The laboratory part entirely corresponds consistently to the lecture part and includes the implementation by students of the content presented in lectures.

Teaching methods

Lecture: multimedia presentation, illustrated with examples on the board.
Laboratory classes: implementation of examples adequate to the lecture part - practical classes in the database systems environment.

Bibliography

Basic
1. "Podstawowy wykład z systemów baz danych", J. D. Ullman, J. Widom, WNT, 2000
2. "Wprowadzenie do systemów baz danych", C. J. Date, WNT, 2000
3. "ABC języka SQL", M. Szeliga, Wydawn. Helion
4. "Podstawy SQL. Ćwiczenia praktyczne.", A. Jakubowski, Wydawn. Helion.
5. "SQL dla każdego" , R. Coburn Wydawn. Helion.
Additional
1. "Database: Principles, Programming, and Performance, 2nd edition" , P. O, Morgan Kaufman, 2001
2. "Database System Implementation", H. Garcia-Molina, i inni, Prentice Hall, 2000

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	20	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00