



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Industrial Database Systems [S2AiR2-SSiR>PSBD]

Course

Field of study

Automatic Control and Robotics

Year/Semester

1/2

Area of study (specialization)

Control and Robotic Systems

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

15

Number of credit points

2,00

Coordinators

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Lecturers

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:

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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. The final grade from the laboratory is prescribed in the field of passing the lecture.

Programme content

The scope of lectures includes an introduction to SQL. Groups of SQL commands, the general syntax of commands, the basic command for searching and processing data will be discussed and presented. The laboratory part in its entirety coherently corresponds to the lecture part and includes students' implementation of the content presented during the lectures.

Course topics

Topics covered include the SELECT clause, selecting rows using the WHERE clause, and ordering query results using the ORDER BY clause. Next, the basic functions operating on single lines (character, numeric and date functions) and functions calculating aggregates (SUM, MIN, MAX, AVG, COUNT) will be discussed. The course will cover: equal connections, inequality connections, external connections and recursive connections. Additionally, regular and correlated subqueries will be discussed and presented, as well as the data manipulation language (DML), which allows inserting, modifying and deleting data from tables. The INSERT, UPDATE and DELETE commands will be discussed.

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	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00