



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Databases in technical applications

### Course

Field of study

Mechanical Engineering

Area of study (specialization)

Virtual Design Engineering

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

15

Tutorials

Laboratory classes

15

Projects/seminars

Other (e.g. online)

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Witold Stankiewicz

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tel. 665 2167

Wydział Inżynierii Mechanicznej

ul. Piotrowo 3 60-965 Poznań

Responsible for the course/lecturer:

### Prerequisites



**KNOWLEDGE:** the student has knowledge of information technology, including programming languages, as well as knowledge of mechanical engineering

**SKILLS:** the student has basic IT skills, including basic programming skills in any programming language

**SOCIAL COMPETENCES:** the student is aware of the responsibility for the tasks performed, understands the need to acquire new knowledge.

### Course objective

Students will learn how to work with databases. They will learn the basics of the SQL language. They acquire the skills of storing and processing engineering data using relational databases. They will learn the basics of creating database applications.

### Course-related learning outcomes

#### Knowledge

K2\_W07: Knows the basic concepts and practical, engineering application of database management systems

K2\_W10: Has knowledge in the field of creating and using relational databases in technical applications and their management, as well as searching data using the SQL language. Has knowledge of the integration of information flows and the use of IT tools supporting design.

#### Skills

K2\_U01: Is able to obtain information from literature, databases and other properly selected sources, also in English or another foreign language recognized as the language of international communication in the field of study; is able to integrate the information obtained, interpret and critically evaluate it, as well as draw conclusions and formulate and comprehensively justify opinions.

K2\_U14: Is able to describe and use engineering database management systems software and use the databases. Is able to design a simple database structure for engineering applications.

#### Social competences

K2\_K01: Understands the need for lifelong learning; can inspire and organize the learning process of others.

K2\_K04: Can adequately set priorities for implementation of the tasks specified by him or others.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Colloquium on theoretical knowledge. Class reports. Assessment of individually made projects.

### Programme content

Introduction to databases, terminology in the field of the subject. SQL: introduction to language and command structure, basic commands. SQL: multi-table queries, nesting queries, regular expressions. Transactions, functions and triggers. Designing relational databases. Data administration and database



administration. Access to databases from the level of programming languages (on the example of PHP / Python).

### Teaching methods

Information / problem lecture, Case study, laboratory with elements of project.

### Bibliography

Basic

P. Beynon-Davies, Systemy baz danych, WNT, Warszawa 2000

M. Hernandez, Bazy danych, Mikom, Warszawa 2000

A. Jakubowski, Podstawy SQL. Ćwiczenia praktyczne, Helion, Gliwice 2004.

Additional

R. Coburn, SQL dla każdego, Helion, Gliwice 2001

W. Wieczerzycki, Bazy danych, EFP, Poznań 1994

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	35	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	25	1,0

<sup>1</sup> delete or add other activities as appropriate