

Title Databases	Code 1010331441010330633
Field Computer Science	Year / Semester 2 / 4
Specialty -	Course core
Hours Lectures: 2 Classes: - Laboratory: 1 Projects / seminars: 1	Number of credits 4
	Language polish

Lecturer:

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Status of the course in the study program:

Obligatory course, Faculty of Electrical Engineering, field of Informatics.

Assumptions and objectives of the course:

Fundamental concepts and technologies for designing, using and implementing relational database systems. Conceptual modeling of application domain using ER (EER) model and transforming it to a relational database schema. Database programming in SQL.

Contents of the course (course description):

Databases in information systems; database system concepts and architecture; objectives and tasks of database management system. The relational data model; foundations; relational algebra and relational calculus; Datalog. Functional dependencies and normalization for relational databases; 3NF and BCNF; relational database schema design. Conceptual modeling using Entity-Relationship (ER) and Enhanced-ER (EER) models; transformation of ER and EER diagrams to the relational data model. Metadata in database systems. SQL ? a relational database language; data definition, selection and modification in SQL; using Transact-SQL (TSQL) to create, manipulating and administrating of MS SQL Server databases; database programming in TSQL.

Laboratory

The aim of the laboratory is to design and implement a database project using MS SQL Server 2005/2008 environment. Students practise formulating simple and complex queries in SQL; define tables, integrity constraints, database rules, views, stored procedures, triggers and cursors. All these programming constructs must be used in the prepared project.

Projects/seminars

The aim is to deepen understanding of relational data model and using of theoretical fundamentals to design a relational database and to operate on it. Students practise writing queries in relational algebra, relational calculus and in Datalog. They practise conceptual modeling of application domain (using ER, EER, and UML diagrams) and transformation of the conceptual model into relational schema. Identify and define functional dependencies and carry out the normalization process (1NF, 2NF, 3NF, and BCNF).

Introductory courses and the required pre-knowledge:

Foundations of computer science, programming and operation systems. Introduction do logic and algebraic structures.

Courses form and teaching methods:

Lectures illustrated with slides, laboratory work in database designing and programming (using MS SQL Server).

Form and terms of complete the course - requirements and assessment methods:

Examinations, database projects and database programming in SQL. Ability to use theoretical foundations in solving practical tasks concerning database models, languages and database design.

Basic Bibliography:

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Additional Bibliography:

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