Course: Database Systems and Lab

Faculty: Media and Information
Course ID: M+I401, M+I411

Lecturer: Prof. Dr. Volker Sänger / Prof. Dr. Katharina Mehner-Heindl
Teaching Format: lecture and lab work

Language: English
Teaching Semester: winter
Number of Semesters: 1

Assessment: written exam + finished lab work together with a report

ECTS Credits: 3+1

Prerequisites
- Knowledge in at least one Programming Language

Learning Outcomes
- to understand the importance, the value and the risks of data storage and data management in real world
- to be able to apply the concepts of efficient data management in practice

Content
- Intro: database system, data model, database applications
- The relational model: relations and attributes, selection, join, projection
- SQL: schema definition, queries, data manipulation, views, consistency, ACID-principle, SQL-transactions
- Database design: design phases, semantic data modeling, dependencies, normalization, transforming the semantic scheme into a logical scheme
- Database programming: JSP, object-relational mapping, JDBC, stored procedures, trigger
- Object-relational databases: shortcomings of the relational model, SQL-3
- Database administration: RAID, indices, roles and rights
- NoSQL-databases, CAP and BASE