

## Course content

This course extends the foundational Database System Principles course, focusing on practical database operations and application development using the MySQL database system as the experimental platform.

The course systematically covers:

1. Basic Database Operations: Management of databases and tables, data manipulation (CRUD), advanced queries, and views.
2. Database Control Mechanisms: Transaction management, access control, and security mechanisms in database systems.
3. Database Programming: Use of functions, stored procedures, triggers, transactions, cursors, JDBC, and the Hibernate framework.
4. Database Application Development: Typical case studies illustrating the design and development process of database application systems.

## Course objectives

### Knowledge

1. Apply fundamental database principles and relational database theories.
2. Understand and perform the basic steps of database design and choose appropriate data models for various business requirements.
3. Master the operational principles and methods of MySQL databases and recognize their limitations.

### Skills

1. Design and implement database advanced features, such as triggers, stored procedures, and functions, to meet specific application requirements.
2. Utilize appropriate programming languages and frameworks to design and develop database application systems.

### Competencies

1. Exhibit innovative thinking during the database system design process, considering social, health, safety, legal, cultural, and environmental factors.
2. Employ suitable development tools and frameworks to build comprehensive and efficient database solutions.