



COURSE 8

DATA MANAGEMENT & VISUALISATION

Study load: 6 credits

Total studytime: 150 hours

EU-Partner(s): AP

TC-Partner(s): MUN

PREREQUISITES

- None

STUDY MATERIALS

- Moodle course – digital course
- Presentations
- Elaborated examples and cases
- Weblinks
- Video recordings
- Demos

TECHNICAL REQUIREMENTS / LAB EQUIPMENT

- MySQL database
- MySQL Workbench (to visualise data)
- Website www.draw.io (to draw ERD diagrams)
- PowerBI

LEARNING OUTCOMES

- The student has an overview of the industry standards in database model design
- The student has an overview of industry standards in data storage
- The student understands the added value of data normalization
- The student understands how different data storage systems work sustainably & performance wise
- The student understands the added value of data standardization
- The student can design, normalize, query and maintain a given dataset

ACTIVITIES

- Activating lectures
- Labs

CONTENT

1. DATABASE DESIGN:
 - Overview of existing database techniques (both relational and non-relational)
 - Create an ERD based on customer requirements according to the 3 or 3.5 normal form (BCNF)
2. DATA DEFINITION LANGUAGE (DDL):
 - Use of MySQL. Differences from MSSQL are only illustrated.
 - Use of T-SQL to create a relational database, including drawing the database model
 - Import and export of data , forward and reverse engineering of the database
3. DATA MANAGEMENT LANGUAGE (DML)
 - Querying of data (CRUD actions)
 - Use of joins, subqueries, aggregations, groupings, regular expressions and inherent system functions
4. PROGRAMMING

- Simplify database usage and maintenance
- Views
- Basic use of stored procedures, custom functions, triggers and events
- In Python

5. VISUALISATION

- Basic visualisation of summary statistics using PowerBI and MySQL WorkBench

EVALUATION

First exam chance

FORM	%	REMARK
Exam	40.00	Theory
Exam	60.00	Lab exercise

Second exam chance (re-sit exam)

FORM	%	REMARK
Exam	40.00	Theory
Exam	60.00	Lab exercise