

Module Description

Advanced Data Management – non standard database systems

General Information**Number of ECTS Credits**

3

Abbreviation

TSM_AdvDataMgmt

Version

2016.03.24

Responsible of module

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Language

	Lausanne	Bern	Zürich	Lugano/Manno
Instruction	<input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E	<input checked="" type="checkbox"/> E
Documentation	<input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E	<input checked="" type="checkbox"/> E
Examination	<input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E	<input checked="" type="checkbox"/> E

Module category

- Fundamental theoretical principles
 Technical/scientific specialization module
 Context module

Lessons

- 2 lecture periods and 1 tutorial period per week
 2 lecture periods per week

Brief course description of module objectives and content

The course covers the following core topics:

- Distributed Database systems architectures, internals and services such as transaction processing, concurrency control and query processing
- Parallel Database and Cloud Database
- No-SQL Systems

Aims, content, methods**Learning objectives and acquired competencies**

Students understand how to use database technologies to process and manage large data collections.

- They know databases alternatives beyond Relational and Object Relational systems and are able to decide which database system is appropriate depending on the context, and depending on the kind of data available
- They can design and implement Systems based on different architectures
- They understand the functioning of internal components of a database system
- They can reuse the material acquired in this course in their own working environment and apply them to solve their specific problems
- They know the actual research directions of these domains.

Contents of module with emphasis on teaching content

Contents:

The module is organised around 3 core subject areas:

- Distributed database
- Parallel database
- No-SQL database

Schedule:

- Distributed Database technologies and architectures
- 2 phase commit
- Replication
- Parallel architectures
- Cloud architectures
- Hadoop and MapReduce
- Document systems
- Graph systems
- Key value systems
- Column family stores

Teaching and learning methods

Lectures with integrated exercises and case studies

Prerequisites, previous knowledge, entrance competencies

- Database design
- Relational Model, Relational Algebra
- Normalization
- SQL
- Object relational database systems
- XML

Literature

Lecture slides, references to internet resources and books

Assessment**Certification requirements for final examinations (conditions for attestation)**

The successful delivery of solved exercises is condition for entering the examination, but will not contribute to final mark.

Written module examination

Duration of exam: 120 minutes
Permissible aids: none