Data Analysis and Classification

General Information

Number of ECTS Credits

3

Abbreviation

TSM_DataAnaCla

Version

2016.03.24

Responsible of module

Giambattista Ravano

Language

	Lausanne	Bern	Zürich	Lugano/Manno
Instruction	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ E
Documentation	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ E
Examination	☐ E ☐ F	☐ D ☐ E ☐ F	☐ D ☐ E	☒ 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 module is organised around 3 core subject areas:

- Analysis of complex data sets
- Data classification
- Complex networks

Aims, content, methods

Learning objectives and acquired competencies

Students understand how to use database technologies and data analysis tools and languages to process large data collections.

- They learn the basics of the analysis of large data sets
- They know the main tools to address analysis of large data sets
- They will learn and use the most common classification techniques
- They will learn methods for processing and clustering with the purpose of effective analysis
- 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 current research directions within these domains.

Contents of module with emphasis on teaching content

Contents:

The module is organised around 3 core subject areas:

- Analysis of complex data sets
- Data classification
- Complex networks

Schedule:
- Introduction to data analysis
- Data preprocessing: noise and outliers, aggregation, PCA, features selection
- Association rules
- Classification
- Clustering
- Complex Networks

Teaching and learning methods

Lectures with integrated exercises and case studies

Prerequisites, previous knowledge, entrance competencies

- Parallel Databases and Cloud Databases
- No-SQL Systems

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