



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Architetture Dati

2223-1-F1801Q159

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#### Aims

The course is provided in Italian.

First of all the concept of data life cycle and of data base management system is discussed in traditional environments and information systems, and the so called ACID properties are examined,

The evolution of data base management systems from centralized architectures to distributed and federated architectures is examined in detail, providing also general concepts of data architecture design.

As to data governance, two relevant phases are examined in more depth, data linkage (also called object identification ) and fusion, and data quality assessment, that are experimented using tools.

The recent evolution of management systems from "small data" to big data is investigated, with specific reference to the most important phenomena, related to the increase in the volume of data and the increase in the heterogeneity of data types, from relational data bases to document bases, linked open data and graph data.

#### Contents

NoSQL models

(de)centralized data architecture

big data architecture

data management: data integration, quality

## Detailed program

### NoSQL models

- Key value databases
- Wide tables
- Document based
- Graph Databases

### architetture dei DBMS

- Sistemi di basi di dati centralizzati
- Sistemi distribuiti
- Sistemi replicati

### Big data architecture

### Data management

- data integration
- qualità dei dati

## Prerequisites

Knowledge on data models, relational model and Entity Relationship model, and database design methodologies is useful, but non mandatory

## Teaching form

Lectures and exercises in Italian, company presentation

Self-assessment tests, that will not be considered for the final evaluation will be provided

## Textbook and teaching resource

slides will be published on the Elearning platform

Text book

Next Generation Databases: NoSQL, NewSQL, and Big Data

by Guy Harrison Publisher: Apress

Release Date: January 2016

ISBN 9781484213292

## **Semester**

second semester

## **Assessment method**

Written examination related to the topics of the course and exercises. Teacher could ask and oral exam

Alternative assessment method: Project work, individual or in group related to the technologies shown during the course

## **Office hours**

Thursday from 10 to 11 building U14 room 2017 prof Maurino please send an email message before

## **Sustainable Development Goals**

QUALITY EDUCATION

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