UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Introduction To Databases

2324-2-E4102B069

Learning objectives

The course aims at providing competences to understand the model of a relational database for supporting decision making (relational and non-relational databases) as a main asset to achieve the objectives of a business organization, focusing on both technical and methodological aspects. The course also aims to provide technical skills for querying the database through the SQL language.

Contents

Database Design

Conceptual and Logical Design

Databases for Decision Support

NoSQL database

Changes will be notified during lessons

Detailed program

· Database systems design

o Methodologies and models for designing database systems

o Information Systems life cycle

o Entity-Relationships Model
E-R Schema Documentation, Business rules, Documentation techniques

· Conceptual and Logical Design

o Requirements analysis and specification

o Design strategies: top-down, bottom-up, inside-out, mixed strategy

o Quality of conceptual schemas

o CASE tools for designing database systems

· Normalization

o Redundancies and inconsistencies

o Functional dependencies

o Database systems design and normalization: normal form tests, relationship and conceptual schema decomposition

· Database systems for decision support

o Architectures and paradigms for data analysis

o Data mining: processes, issues, and perspectives

o Database NoSQL (Graph-db e documentali)

Changes will be notified during lessons

Prerequisites

None

Teaching methods

The course will be provided by means of lessons, seminars, and laboratory sessions and homeworks.

Assessment methods

The verification method is based on both a written exam (oral test optional).

The written test takes place at the computer and it consists of open and closed questions with multiple answers on all course topics.

The evaluation is focused on the student's ability to answer to specific questions by referring both to the theoretical and practical aspects (through examples) connected to the requested topic.

The written test is common for both attending students and non-attending students.

The oral exam is aimed at assessing the theoretical knowledge of the student on the topics of the course. The ability to reason and deepen the issues proposed during the examination and the methodological rigor of their development will be evaluated.

Textbooks and Reading Materials

Chianese, Moscato, Picariello e Sansone: *Sistemi di basi di dati e applicazioni*. Maggioli Editore, 2015.

Semester

III ciclo

Teaching language

Italian

Sustainable Development Goals