UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Data Bases

2021-2-E3101Q103

Aims

At the end of the course the student should be able to model, design and implement a simple database application in the relational model and express complex queries .

Contents

To introduce basic concepts in the data base topics. Data bases are considered the "bedrock" of modern business, and are the core technology in practically every application of ICT. The skills provided by the course concern three different areas:

Models for databases, both at the conceptual level (the Entitiy Relationship model) and at the Data Base Management System logical level (Relational model).
Languages for querying and updating a data base, specifically, SQL and Query by Example.
Methodologies for data base design, both the conceptual phase and the logical phase.

Detailed program

1., Introduction to data bases and Data Base Management Systems. The data base as an organizational and technological issue.

2,. Relational Model, Relations, Attributes, Domains, Integrity constraints, Keys, referential integrity.

3. Relational Algebra, Select, Project, Natural Join, Cartesian Product, Theta-Join

4. SQL, Data Description Language and Data Manipulation Language, syntax and semantics of commands.

5. Entity Relationship model, Entities, Relationships, Attributes, IS-A relations, Generalizations, Cardinalities, Identifiers. Conceptual Database Design, Qualities of a Conceptual Schema, Requirements collection and Analysis, Design Strategies.

6. Logical Database Design, Transformation Phase and Translation Phase, schema optimization.

Prerequisites

Set theory and propositional calculus, as taught in high schools.

Teaching form

The course consists of lectures, classroom exercises, and practical activities.

Textbook and teaching resource

P.Atzeni Ceri, Paraboschi, Torlone, Basi di Dati – Modelli e linguaggi di interrogazione – terza edizione, McGraw-Hill, 2009
D. Braga, M. Brambilla, A. Campi - Eserciziario di Basi di Dati Progetto Leonardo Bologna.
L. Cabibbo, R. Torlone, C. Batini - Basi di dati, Progetti ed esercizi svolti, Pitagora Editrice Bologna.

slides and other materials provided by professors.

The course for students A-L makes accessible the voice commented Power point slides at

http://elearning.unimib.it/course/view.php?id=14058

password: ospite2017!

the video lessons on Data base modleing and Deisgn accessible at

http://elearning.unimib.it/course/view.php?id=17573

and the trasncriptions of video lessons in the textbook downloadable at

http://hdl.handle.net/10281/97114

Semester

second semester

Assessment method

Written exam with open questions on all the main topics related to the course: ER model, conceptual design, reletional model, relational algebra, SQL, logical DB design. There are two exemptions to be supported during the year.

Office hours

following the class lessons and by appointment (R Schettini)

monday 12-13 by appointment (C. Batini)