COMPUTER ENGINEERING (LM55)

(Lecce - Università degli Studi)

Insegnamento BIG DATA MANAGEMENT

GenCod A005793

Docente titolare Mario Alessandro BOCHICCHIO

Insegnamento BIG DATA MANAGEMENT

Insegnamento in inglese BIG DATA MANAGEMENT

Settore disciplinare ING-INF/05

Corso di studi di riferimento COMPUTER ENGINEERING

Tipo corso di studi Laurea Magistrale

Crediti 9.0

Ripartizione oraria Ore Attività frontale: 81.0

Per immatricolati nel 2019/2020

Erogato nel 2020/2021

Anno di corso 2

Lingua FRANCESE

Percorso PERCORSO COMUNE

Sede Lecce

Periodo Primo Semestre

Tipo esame Orale

Valutazione Voto Finale

Orario dell'insegnamento https://easyroom.unisalento.it/Orario

BREVE DESCRIZIONE DEL CORSO

The aim is to provide the basics about the main database theories, techniques and tools to design / implement databases and database applications.

Topics:

- Database, relational databases, NoSQL and NewSQL;
- DataBase Management Systems;
- Relational Model and Relational Algebra;
- SQL: data definition and manipulation;
- Basics of Human-Computer Interaction and interface design for DB;
- Architectural aspects: Clients, Servers, Peers, Devices, IoT, ...
- Big data, data lakes, data analytics, machine learning, AI;

PREREQUISITI

Good knowledge of Object Oriented Languages (at least 1), techniques and tools. Elements of computer networks and Web technologies.

OBIETTIVI FORMATIVI

Acquired skills

Students will be able to design and understand data models, to create and manage databases and to design and implement data-centric applications.

METODI DIDATTICI

Teaching method

Frontal lessons and lectures, for theoretical aspects, will be followed by participatory learning sessions and hands-on sessions to reinforce the comprehension and to acquire the abilities relevant to the field of database design.

MODALITA' D'ESAME	**Students evaluation** ▪Written test: on <u>all</u> aspects covered by the program ▪Oral Test: 1. <u>All</u> theoretical aspects covered by the program 2. Presentation and discussion of a project
ALTRE INFORMAZIONI UTILI	**Office Hours** By appointment; contact the instructor by email or at the end of class meetings.
PROGRAMMA ESTESO	**Fundamental of Database Systems, Elmasri-Navathe: 7th edition** Chapters: - 1: Databases and Database Users - 2: Database System Concepts and Architecture - 3: Data Modeling Using the Entity–Relationship (ER) Model - 4: The Enhanced Entity–Relationship (EER) Model - 5: The Relational Data Model and Relational Database Constraints - 6: Basic SQL - 7: More SQL: Complex Queries, Triggers, Views, and Schema Modification - 8: The Relational Algebra and Relational Calculus 8.1: Unary Relational Operations: SELECT and PROJECT 8.2: Relational Algebra Operations from Set Theory 8.3: Binary Relational Operations: JOIN and DIVISION 8.4: Additional Relational Operations 8.5: Examples of Queries in Relational Algebra - 9: Relational Database Design by ER- and EER-to-Relational Mapping - 10: Introduction to SQL Programming Techniques - 11: Web Database Programming Using PHP - 12: Object and Object-Relational Databases - 14: Basics of Functional Dependencies and Normalization for Relational Databases 14.1: Informal Design Guidelines for Relation Schemas 14.2: Functional Dependencies 14.3: Normal Forms Based on Primary Keys 14.4: General Definitions of Second and Third Normal Forms 14.5: Boyce-Codd Normal Form - 16: Disk Storage, Basic File Structures, Hashing, and Modern Storage Architectures - 17: Indexing Structures for Files and Physical Database Design - 20: Introduction to Transaction Processing Concepts and Theory - 21: Concurrency Control Techniques - **Teaching material:** more concepts on requirement elicitation and database application design and implementation, multidimensional analisys, datawharehouse, big data, big data management, database security, database administration, NoSQL, NewSQL, distributed databases.
TESTI DI RIFERIMENTO	R. Elmasri, S. Navathe, Fundamental of Database Systems, 7a edizione, Pearson ed.