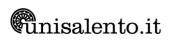
COMPUTER ENGINEERING (LM55)

(Lecce - Università degli Studi)

Teaching DATABASE	Teaching in italian DATABASE	Course year 2
	Teaching DATABASE	Language ENGLISH
C C . d 0002120	SSD code ING-INF/05	Curriculum PERCORSO COMUNE
GenCod A003129 Owner professor Mario Alessandro BOCHICCHIO	Reference course COMPUTER ENGINEERING	
	Course type Laurea Magistrale	Location Lecce
	Credits 9.0	Semester First Semester
	Teaching hours Front activity hours: 81.0	Exam type Oral
	For enrolled in 2018/2019	Assessment Final grade
	Taught in 2019/2020	Course timetable https://easyroom.unisalento.it/Orario
BRIEF COURSE DESCRIPTION	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 d • Architectural aspects: Clients, Servers, Peers, Devices, I • Big data, data lakes, data analytics, machine learning, A	loT,
REQUIREMENTS	Good knowledge of Object Oriented Languages (at least 1), techniques and tools. Elements of computer networks and Web technologies.	
COURSE AIMS	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.	
TEACHING METHODOLOGY	Teaching method Frontal lessons and lectures, for theoretical aspects, sessions and hands-on sessions to reinforce the co relevant to the field of database design.	



ASSESSMENT TYPE	 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	
OTHER USEFUL INFORMATION	Office Hours	
	By appointment; contact the instructor by email or at the end of class meetings.	
FULL SYLLABUS	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.	

REFERENCE TEXT BOOKS R. Elmasri, S. Navathe, Fundamental of Database Systems, 7a edizione, Pearson ed.

