SYLLABUS

COURSE DESCRIPTION YEAR 2023/2024

COURSE TITLE	**Database Management Systems**
COURSE CODE	76213
SCIENTIFIC SECTOR	INF/01
DEGREE	Bachelor in Computer Science
SEMESTER	2nd
YEAR	2nd
CREDITS	6
TOTAL LECTURING HOURS	40
TOTAL LAB HOURS	20
ATTENDANCE	Attendance to the course and the labs is not compulsory, but generally recommended to maximize the learning effect. The exam modalities for attending and non-attending students are the same.
PREREQUISITES	Students should be familiar with basic concepts in databases (including relational databases, SQL, and relational algebra) and algorithms and have decent programming skills. This material is taught in the following courses: Introduction to Databases, Data Structures and Algorithms, Computer Programming.
COURSE PAGE	https://ole.unibz.it/
SPECIFIC EDUCATIONAL OBJECTIVES	Type of course: "caratterizzanti" Scientific area: "discipline informatiche" Based on the concepts gained in the introductory database course, students will develop a deeper understanding of how database management systems work. Specifically, students will learn basic and advanced techniques and methods used in database management systems to store and index data, to efficiently process concurrent user queries and to keep the data safe and consistent.

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LECTURER	Johann Gamper
SCIENTIFIC SECTOR OF THE LECTURER	INF/01
TEACHING LANGUAGE	German
OFFICE HOURS	Tuesday, 13:00-14:00 POS 2.15, Faculty of Computer Science, Piazza Domenicani 3
TEACHING ASSISTANT	Same as lecturer
OFFICE HOURS	
LIST OF TOPICS COVERED	• Physical data storage • Indexing and hashing • Query processing and optimization • Transaction processing • Concurrency control • Recovery
TEACHING FORMAT	Frontal lectures interleaved with exercises, and labs with exercises

LEARNING OUTCOMES	**Knowledge and understanding** • **D1.4** Understand the key principles, the structures and the organization of relational databases; • **D1.10** Know in detail the principles of relational database systems and methods for designing, developing and optimizing databases; **Applying knowledge and understanding** • **D2.13** Be able to develop efficient and optimized applications based on relational databases; **Ability to make judgments** • **D3.1** Be able to collect and interpret useful data and to judge information systems and their applicability • **D3.2** Be able to work autonomously according to the own level of knowledge and understanding **Communication skills** • **D4.1** Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately; **Ability to learn** • **D5.1** Have developed learning capabilities to pursue further studies with a high degree of autonomy. • **D5.3** Be able to follow the fast technological evolution and to learn cutting edge IT technologies and innovative aspects of last generation information systems.
ASSESSMENT	The assessment of the course consists of a single written exam at the end. The exam consists of verification questions, transfer of knowledge questions, and exercises. The exam will assess the learning outcomes related to knowledge and understanding using verification questions, the learning outcomes related to applying knowledge and understanding using transfer of knowledge questions and exercises.
ASSESSMENT LANGUAGE	German
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	The written exam counts 100% of the grade. The exam is evaluated according to the following criteria: clarity, completeness and correctness of answers.
REQUIRED READINGS	Silberschatz, Korth, Sudarshan: Database System Concepts, 5th edition (or later), McGraw Hill, 2006.

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SUPPLEMENTARY READINGS	Garcia-Molina, Ullman, Widom: Database Systems: The Complete Book, Prentice-Hall 2002.
SOFTWARE USED	Postgres, PgAdmin