Fakultät für Ingenieurwesen
Facoltà di Ingegneria
Faculty of Engineering

SYLLABUS
COURSE DESCRIPTION YEAR 2025/26

COURSE TITLE	**Database Management Systems**
COURSE CODE	76213
SCIENTIFIC SECTOR	INFO-01/A
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	The course requires knowledge of relational databases (including SQL and relational algebra), algorithms, and programming skills. This material is taught in the following courses: Introduction to Databases, Data Structures and Algorithms, Introduction to Programming.
COURSE PAGE	The course page will be made available on the Microsoft Teams class for this course or on https://ole.unibz.it, as communicated by the lecturer. Additional materials can also be found in the university's Reserve Collection at https://www.unibz.it/en/services/library/new-rc/.

SPECIFIC EDUCATIONAL OBJECTIVES	This course belongs to the type "Attività formativa caratterizzante" and the subject area is "Informatica". 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.

LECTURER	Johann Gamper (johann.gamper@unibz.it)

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SCIENTIFIC SECTOR OF THE LECTURER	INFO-01/A
TEACHING LANGUAGE	German
OFFICE HOURS	Office BZ B1 5.21, Tuesdays 13:00–14:00, by appointment via email
TEACHING ASSISTANTS	/
OFFICE HOURS	/
LIST OF TOPICS COVERED	− Physical data storage − Indexing and hashing − Query processing and optimization − Transaction processing − Concurrency control − Recovery
TEACHING FORMAT	The course includes frontal lectures, exercises, and lab exercises.

LEARNING OUTCOMES	Knowledge and Understanding − D1.4 Understand the key principles, the structures and the organization of relational databases and methods for designing and developing databases. − D1.9 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. Learning skills − 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 for the course consists of a single written exam at the end of the term. The exam includes verification questions, transfer-of-knowledge questions, and exercises. Verification questions are used to assess learning outcomes related to knowledge and understanding, while transfer-of-knowledge questions and exercises evaluate the ability to apply that knowledge in practical contexts.
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	– Abraham Silberschatz, Henry Korth, and S. Sudarshan. Database System Concepts. McGraw-Hill Science/Engineering/Math, Boston, 5th edition, May 2005. ISBN 978-0-07-295886-7.
SUPPLEMENTARY READINGS	– Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer D. Widom. Database Systems: The Complete Book. Pearson College Div, Upper Saddle River, N.J, 2th edition, 2008. ISBN 978-0-13-187325-4.
SOFTWARE USED	– PostgreSQL (https://www.postgresql.org) – PgAdmin (https://www.pgadmin.org)