Syllabus

Descrizione corso

Titolo insegnamento	Database Management Systems
Codice insegnamento	76213
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	INFO-01/A
Lingua	Tedesco
Corso di Studio	Corso di laurea in Informatica
Altri Corsi di Studio (mutuati)	
Docenti	prof. Johann Gamper, Johann.Gamper@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/748
Assistente	
Semestre	Secondo semestre
Anno/i di corso	2
CFU	6
Ore didattica frontale	40
Ore di laboratorio	20
Ore di studio individuale	90
Ore di ricevimento previste	
Sintesi contenuti	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.
Argomenti dell'insegnamento	- Physical data storage - Indexing and hashing

	- Query processing and optimization - Transaction processing - Concurrency control - Recovery
Parole chiave	Database management systems, index structures, query optimization, transactions, concurrency control
Prerequisiti	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.
Insegnamenti propedeutici	
Modalità di insegnamento	The course includes frontal lectures, exercises, and lab exercises.
Obbligo di frequenza	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.
Obiettivi formativi specifici e risultati di apprendimento attesi	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.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	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.
Criteri di valutazione	The written exam counts 100% of the grade. The exam is evaluated according to the following criteria: clarity, completeness and correctness of answers.
Bibliografia obbligatoria	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.
Bibliografia facoltativa	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.
Altre informazioni	- PostgreSQL (https://www.postgresql.org) - PgAdmin (https://www.pgadmin.org)
Obiettivi di Sviluppo Sostenibile (SDGs)	Istruzione di qualità