

## SYLLABUS COURSE DESCRIPTION

COURSE TITLE	Introduction to Databases
COURSE CODE	76209
SCIENTIFIC SECTOR	ING-INF/05
DEGREE	Bachelor in Computer Science
SEMESTER	1st
YEAR	2nd
CREDITS	6

TOTAL LECTURING HOURS	60
TOTAL LAB HOURS	20
PREREQUISITES	Students should have a solid mathematical foundation and be familiar with the basic programming concepts, data structures and algorithms. These prerequisites are covered in the following courses: Analysis, Introduction to Programming, Programming Project, and Data Structures and Algorithms.
COURSE PAGE	https://ole.unibz.it/ http://www.inf.unibz.it/~calvanese/teaching/idb/

SPECIFIC EDUCATIONAL OBJECTIVES	<ul><li>Type of course: "caratterizzante"</li><li>Scientific area: "discipline informatiche"</li></ul>
	Students attending this course will have acquired the techniques and methods to address problems of database design, and to make use of the basic functionalities (definition, update, and querying of the database) of database management systems in the context of development and deployment of information systems. In addition, students will be able to develop applications that programmatically interact with a database management system. The course explicitly refers to relational databases and to the corresponding database management systems based on the SQL language. However, the taught methods and principles are of a more general nature, and can be applied also in those contexts where data models and database systems different from relational ones are adopted.

LECTURER	<u>Diego Calvanese</u>
SCIENTIFIC SECTOR OF THE LECTURER	ING-INF/05

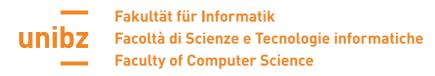


## Fakultät für Informatik unibz Facoltà di Scienze e Tecnologie informatiche **Faculty of Computer Science**

TEACHING LANGUAGE	English
OFFICE HOURS	Announced on the webpage of the lecturer.
TEACHING ASSISTANT	Davide Lanti
OFFICE HOURS	Announced on the webpage of the teaching assistant.
LIST OF TOPICS COVERED	<ul> <li>Conceptual modeling of databases</li> <li>Relational data model</li> <li>Relational algebra, relational calculus and SQL</li> <li>Database design theory with normalization theory</li> <li>Procedural language extensions to SQL</li> <li>Using SQL in database applications: API, embedded SQL</li> </ul>
TEACHING FORMAT	Frontal classroom lectures plus exercises.

LEARNING	Knowledge and understanding
OUTCOMES	know in detail the principles of relational database systems and  mathods for designing and developing databases;
	methods for designing and developing databases;
	Applying knowledge and understanding
	<ul> <li>be able to develop and query relational databases;</li> </ul>
	<ul> <li>be able to apply the own knowledge to the analysis, design,</li> </ul>
	development and testing of information systems which satisfy given requirements;
	Ability to make judgments
	<ul> <li>be able to collect useful data and to judge information systems and their applicability;</li> </ul>
	<ul> <li>be able to work autonomously according to the own level of knowledge;</li> </ul>
	Communication skills
	<ul> <li>be able to work in teams to implement software systems;</li> </ul>
	Ability to learn
	<ul> <li>have acquired learning capabilities that enable them to carry out project activities in companies, public institutions or in distributed development communities;</li> <li>be able to learn the innovative features of state-of-the-art technologies and information systems;</li> </ul>

ASSESSMENT	<ul> <li>Project work to test knowledge application skills and communication skills, done in small groups to present their work written and orally.</li> <li>Written exam with verification questions and questions to test knowledge application skills.</li> </ul>
ASSESSMENT LANGUAGE	English
EVALUATION CRITERIA AND	20% project work 80% written exercises



REQUIRED READINGS	Course Lecture Notes, made available in ole.
SUPPLEMENTARY READINGS	Raghu Ramakrishnan, Johannes Gehrke. Database Management Systems. 3 <sup>rd</sup> edition. McGraw-Hill, 2005. Available at University Library Bozen: 13-Textbook Collection (ST 271)
SOFTWARE USED	PostgreSQL Database Management System