



### Programme of Module "Basi di Dati"

- Code: F0137
- Type of course unit: Compulsory (Bachelor Degree in Computer Science curriculum General)
- Level of course unit: Undergraduate Degrees
- Semester: 2

Number of ects credits: (Bachelor Degree in Computer Science) 6 (workload 150 hours)

Teachers: Stefania Costantini (Stefania.Costantini@univaq.it)

<b>1</b>	<b>Course objectives</b>	Following this course, the students will: understand what is a database, from the conceptual, mathematical and practical points of view; become able to develop the conceptual and logical design of a relational database, including both the structure and the operations; understand the basic functionalities of a DBMS (Data Base Management System); acquire notions about advanced aspects and future directions of the field.
<b>2</b>	<b>Course content and learning outcomes (dublin descriptors)</b>	<p>Topics of the module include:</p> <ul style="list-style-type: none"> <li>• Introduction, data models, the relational model (RL).</li> <li>• Relational algebra and calculus, Datalog.</li> <li>• Database Conceptual and Logical Design: Entity Relationship (E-R) diagrams, restructuration and translation into relational schemas.</li> <li>• Normalization of relational schemas.</li> <li>• Advanced databases: object-oriented databases, hints on data warehouses and cloud-computing.</li> <li>• Database Technology: concurrency and fault-tolerance.</li> </ul>
<b>3</b>	<b>Course prerequisites</b>	The student should be acquainted with some programming language, so as to understand what a file is, and to have experimented some basic operations on files. The student should possess some basic knowledge of operating systems, namely about the file-system and concurrency. It is mandatory to possess basic notions of mathematical Logic and Set Theory.
<b>4</b>	<b>Teaching methods and language</b>	<p>Lectures and interactive exercise sessions.</p> <p><b>Language:</b> Italian</p> <p><b>Reference textbooks</b></p> <ul style="list-style-type: none"> <li>• Atzeni, Ceri, Paraboschi, Torlone, <i><b>Basi di Dati: Concetti, Linguaggi e Architetture,</b></i> McGraw-Hill.</li> </ul>
<b>5</b>	<b>Assessment methods</b>	The exam of the Database Module is composed of a mandatory written test and an optional oral test. The oral test can be required: by the student in order to improve grades; by the teacher in case the student's written test has serious omissions or mistakes.