



### Programme of Course "Database Systems"

- Code: DT0347
- Type of course unit: Compulsory (Master Degree in Applied Data Science curriculum Data for Smart City), Compulsory (Master Degree in Applied Data Science curriculum Data for Life Science)
- Level of course unit: Postgraduate Degrees
- Semester: 1

Number of ects credits: (Master Degree in Applied Data Science) 6 (workload 150 hours)

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1	<b>Course objectives</b>	This course aims at providing practical knowledge and competences about database systems. After a brief introduction to database systems and their architectures, the course turns to data modelling through the Entity-Relationship model. Then, a brief overview of the Boolean algebra is provided, in order to introduce students to SQL essential aspects. The latter consist of introducing data types and definition, and training students on basic SQL constraints and queries, as well as insert/delete/update operations. Afterwards, SQL advanced aspects are provided, such as complex queries, triggers, views and modification of a database schema. Finally, the course introduces database programming, illustrates limitations of traditional database systems and provides knowledge about XML and JSON data formats.
2	<b>Course content and learning outcomes (dublin descriptors)</b>	<p>Topics of the module include:</p> <ul style="list-style-type: none"> <li>• Introduction to database systems and architectures.</li> <li>• Usage of the Entity Relationship model for data modelling.</li> <li>• Boolean Algebra.</li> <li>• SQL essential aspects: data types and data definition, basic SQL constraints and querying, insert/delete/update.</li> <li>• SQL advanced aspects: complex queries, triggers, views, database schema modification.</li> <li>• Introduction to database programming and advanced aspects: limitations, XML and JSON data formats.</li> </ul>
3	<b>Course prerequisites</b>	
4	<b>Teaching methods and language</b>	<p>Frontal lectures and exercise sessions.</p> <p><b>Language:</b> English</p> <p><b>Reference textbooks</b></p> <ul style="list-style-type: none"> <li>• Elmasri Ramez And Navathe Shamkant, <i>Fundamentals of Database Systems</i>. Pearson. (vol. 7th edition) 2016.</li> </ul>
5	<b>Assessment methods</b>	The exam of the Database Systems course 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.