Teaching Guide				
Identifying Data				2016/17
Subject (*)	Databases		Code	614G01013
Study programme	Grao en Enxeñaría Informática			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Second	Obligatoria	6
Language	SpanishGalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Computación			
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Web				
General description				

Study programme competences	
Code	Study programme competences
A18	Coñecemento e aplicación das características, funcionalidades e estrutura das bases de datos, que permitan o seu adecuado uso, e o deseño e a análise e implementación de aplicacións baseadas nelas.
A19	Coñecemento e aplicación das ferramentas necesarias para o almacenamento, procesamento e acceso aos sistemas de información, incluídos os baseados en web.
B1	Capacidade de resolución de problemas
B3	Capacidade de análise e síntese
B4	Capacidade para organizar e planificar
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.

Learning outcomes			
Learning outcomes	Study programme competences		
Demonstrate knowledge and understanding of the concepts, principles, and basic theories of relational databases.	A18	B3	C7
Capacity to model and design databases in order to allow the storage of the information needed for specific application domains, taking special care with the integrity of the data and the needs of the organization that will use the database.	A18	B1 B3 B4	C3 C6
Manage databases by executing SQL statements.	A18 A19	B1 B3 B4	C3 C6 C7

Contents	
Topic	Sub-topic

Relational databases	Relationship definition Domains and attributes Keys Integrity constraints SQL language
Relational algebra	Expressions Operators
Database design	Design problems Design phases Normalization Conceptual design ER to relational model translation
File systems	File types Indexes
Concurrency and fail recovery	Problems due to concurrency and fails Transaction Recovery techniques Concurrency control techniques

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Problem solving	A18 A19 B1 B3 B4 C6 C7	13	19.5	32.5
Laboratory practice	A18 A19 B1 B3 B4 C3	14	33	47
Mixed objective/subjective test	A18 B1 B3 B4	3	0	3
Guest lecture / keynote speech	A18 A19 C6 C7	26	39	65
Personalized attention		2.5	0	2.5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Problem solving	Problem solving lectures where a problem to solve is exposed. First, the student tries to solve the problem for a while, considering different aspects to solve it. Finally, the problem is solved in the blackboard, showing the typical errors of the solutions provided by the students.
Laboratory practice	In laboratory classes, teachers present the knowledge needed to acquire the proposed skills and students will do exercises that will lead them to develop their operative skills.
Mixed objective/subjective test	It consists in a final exam that will contain both questions related to theoretical issues and problems to solve.
Guest lecture / keynote speech	Classroom lectures. In them, the fundamental contents of the subject will be exposed. They are devoted to showing objectives, motivation, concept development, utility, and summary.

Personalized attention	
Methodologies	Description

Laboratory practice Problem solving	After proposing a problem, the teacher discusses with students the possible solutions and standard errors until a satisfactory solution is achieved. In the laboratory, there will be (semi) personalized support. The teacher attends specific questions to each student or group.

Assessment			
Methodologies	Competencies	Description	Qualification
Mixed objective/subjective test	A18 B1 B3 B4	Both at the FIRST OPPORTUNITY and in the SECOND OPPORTUNITY to pass the course, it is necessary to pass a conventional written test which will represent 75% of the global grade. To pass the course globally it is necessary to obtain in the mixed test a minimum grade of 3.5 (over 7.5). If that minimum grade is not achieved, the maximum grade cannot exceed 4.5 (and therefore the course is failed) Percentage: 75% Top grade: 7.5 points Minimum compensable Note: 3.5 (over 7.5)	75
Laboratory practice	A18 A19 B1 B3 B4 C3	For the first opportunity, it has two components: -SQL language Test on the computer in classroom practices (Percentage: 15% - Maximum grade 1.5 pt). -Design a database (Percentage: 10% - Maximum grade 1 pt). For the second opportunity, you can only recover or improve the grade of the SQL language test, by performing a series of written exercises added to the mixed test (Percentage: 15% - Maximum grade 1.5 pt).	25

Assessment comments
In the FIRST OPPORTUNITY, students that do not take the written exam will obtain a grade of "Non presentado" (Absent). If a student passes the course in the FIRST OPPORTUNITY, he/she will not be able to be evaluated in the SECOND OPPORTUNITY for extra credit. If a student fails the course in the FIRST OPPORTUNITY, he/she can retake the SQL language test, the written test or both in the SECOND OPPORTUNITY. If a student decides to not retake a test, he/she will keep the grade for that test obtained in the first opportunity. If a student decides to retake a test, the final grade for that test will be the one obtained during the second opportunity (which can be higher or lower than the one obtained in the first opportunity). In the SECOND OPPORTUNITY, students that do not re-take any of the tests (written test and/or SQL language test) will obtain a grade of "Non presentado" (Absent). ACADEMIC DISPENSATION: Students officially enrolled part-time who have been granted an official dispensation from attending classes, as stipulated in the regulations of this University, will be able to do (and submit) all (or part) of the practices by their own. In the case that the activities require specific equipment, or are scheduled for a specific date and time, a viable alternative will be provided, where possible, at their request. ADVANCED OPPORTUNITY: The assessment for the advanced opportunity will consist of a written exam that will compute for the 100% of the grade.

Sources of information

Basic	- A. Silberschatz; H. Korth; S. Sudarshan (2010). Database System Concepts. McGraw Hill - Elmasri, R.; Navathe, S. (2011). Database systems: models, languages, design, and application programming. Addison-Wesley - Alan Beaulieu (2009). Learning SQL (2nd Ed). O'Reilly
Complementary	- Cuadra, D.; Castro, E.; Iglesias, A. M.; Martínez, P.; Calle, F. J.; de Pablo, C.; Al-Jumaly, H.; Mo (2007). Desarrollo de Bases de Datos: casos prácticos desde el análisis a la implementación. Madrid: Ra-ma - de Miguel, A,; Martínez, P.; Castro, E.; Cavero, M., Cuadra, D.; Iglesias, A. M.; Nieto, C. (2001). Diseño de bases de datos. Problemas resueltos. Madrid: Ra-ma

Recommendations
Subjects that it is recommended to have taken before
Computer Science Preliminaries/614G01002 Programming II/614G01006
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.