UNIVERSIDADE DA CORUÑA

Teaching Guide

Identifying Data				2018/19
Subject (*)	Databases		Code	614G01013
Study programme	Grao en Enxeñaría Informática			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Second	Obligatory	6
Language	SpanishGalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Computación			
Coordinador	López Rodríguez, Juan Ramon		E-mail	juan.ramon.lopez@udc.es
Lecturers	López Rodríguez, Juan Ramon		E-mail	juan.ramon.lopez@udc.es
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		
Knowledge and understanding of the concepts, principles, and basic theories of relational databases.	A18	B3	C7
Ability 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
Ability to 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
	The SQL language
Relational algebra	Expressions
	Operators

Database design	Design problems
	Design phases
	Normalization
	Conceptual design
	ER to relational model translation
File systems	Files
	Indexes
Concurrency and fail recovery	Problems due to concurrency and failures
	Transactions
	Recovery techniques
	Concurrency control techniques

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A18 A19 C7 C6	22	33	55
Problem solving	A18 B1 B3 C6	14	21	35
Laboratory practice	A18 A19 B1 B3 B4 C3 C6	18	27	45
Supervised projects	A18 B1 B3 B4 C3 C6	6	6	12
Mixed objective/subjective test	A18 B1 B3 C6	2	0	2
Personalized attention		1	0	1
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
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.
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.
Supervised projects	A database logical and conceptual modeling project will be proposed. The student shall develop it alone, with some assistance from the teacher. To review the final result, an appointment will be made between the student and the teacher.
Mixed objective/subjective test	It consists in a final exam that will contain both questions related to theoretical issues and problems to solve.

Personalized attention	
Methodologies	Description
Laboratory practice Supervised projects	In the laboratory, there will be a semi-personalized support. The teacher will attend specific questions to each student or group. The teacher will attend any doubt related to the supervised project, both in the classroom or in the office. The final result will be reviewed individually with each student.

Assessment

Methodologies	Competencies	Description	Qualification
Mixed objective/subjective test	A18 B1 B3 C6	Both at the FIRST OPPORTUNITY and at the SECOND OPPORTUNITY, for passing the course it is necessary to pass a conventional written exam 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 global grade will not exceed 4.5 (and therefore the course will be failed) Maximum grade: 7.5 points Minimum grade to pass the course: 3.5 (over 7.5)	75
Laboratory practice	A18 A19 B1 B3 B4 C3 C6	For the FIRST OPPORTUNITY: -SQL language test on the computer in classroom practices (maximum grade 1.5 pt). For the SECOND OPPORTUNITY: -SQL language test by means of a written exercise added to the mixed test (maximum grade 1.5 pt).	15
Supervised projects	A18 B1 B3 B4 C3 C6	For the FIRST OPPORTUNITY: -Database design project (Maximum grade 1 pt). For the SECOND OPPORTUNITY: -Unrecoverable. The grade from the first opportunity is kept	10

Assessment comments

FIRST OPPORTUNITY
 In the FIRST OPPORTUNITY, students that do not take the written exam will obtain a grade of "Non presentado" (Absent).According to the UDC regulations, if a student passes the course in the FIRST OPPORTUNITY, he/she will not be able to be evaluated in the SECOND OPPORTUNITY in order to improve his/her grade. 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.SECOND OPPORTUNITYIn 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 "Absent" ("No presentado").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).If a student decides to not retake one of the two tests, he/she will keep the grade for that test obtained in the first opportunity. 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.