



Teaching Guide

Identifying Data					2024/25
Subject (*)	Data Management in Intelligent Scenarios	Code	614G02041		
Study programme	Grao en Ciencia e Enxeñaría de Datos				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Fourth	Optional	6	
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department	Enxeñaría de Computadores				
Coordinador	Gonzalez Lopez, Miguel	E-mail	miguel.gonzalez.lopez@udc.es		
Lecturers	Gonzalez Lopez, Miguel	E-mail	miguel.gonzalez.lopez@udc.es		
Web					
General description	The aim is to present data management architectures, applications and services in practical intelligent scenarios.				

Study programme competences / results

Code	Study programme competences / results
A11	CE11 - Capacidade para coñecer, despregar, configurar e utilizar infraestruturas distribuídas de altas prestacións para o almacenamento, procesamento e análise masiva de datos.
A13	CE13 - Coñecemento e aplicación das características, funcionalidades e estrutura de Internet e as redes de computadores.
A15	CE15 - Capacidade de dar solución a problemas de integración en función das estratexias, estándares e tecnoloxías dispoñibles.
A23	CE23 - Coñecemento e capacidade de aplicación dos conceptos, metodoloxías e tecnoloxías de procesado de audio, imaxe e vídeo en diferentes formatos.
A25	CE25 - Capacidade para identificar a adecuación de cada unha das técnicas de aprendizaxe automática á resolución dun problema, incluíndo os aspectos relacionados coa súa complexidade computacional ou a súa capacidade explicativa, de acordo aos requisitos establecidos.
A27	CE27 - Compresión e dominio de fundamentos e técnicas básicas para a procura e o filtrado de información en grandes coleccións de datos.
A28	CE28 - Compresión e dominio dos fundamentos e técnicas para o procesado de datos escritos, tanto en linguaxe formal como en linguaxe natural.
B2	CB2 - Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B3	CB3 - Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B4	CB4 - Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado
B7	CG2 - Elaborar adecuadamente e con certa orixinalidade composicións escritas ou argumentos motivados, redactar plans, proxectos de traballo, artigos científicos e formular hipóteses razoables.
B8	CG3 - Ser capaz de manter e estender formulacións teóricas fundadas para permitir a introdución e explotación de tecnoloxías novas e avanzadas no campo.
B9	CG4 - Capacidade para abordar con éxito todas as etapas dun proxecto de datos: exploración previa dos datos, preprocesado, análise, visualización e comunicación de resultados.
B10	CG5 - Ser capaz de traballar en equipo, especialmente de carácter multidisciplinar, e ser hábiles na xestión do tempo, persoas e toma de decisións.
C1	CT1 - 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.
C4	CT4 - Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.



Learning outcomes			
Learning outcomes	Study programme competences / results		
Understanding data management architectures in smart scenarios.	A13 A28	B3 B4	
Learning about data management applications in smart scenarios.	A25	B8	
Knowing the provision of smart services in practical scenarios through the use of techniques and methods of data science and engineering	A11 A15 A23 A27	B2 B7 B9 B10	C1 C4

Contents	
Topic	Sub-topic
1. Smart data and big data.	1.1 Smart Data 1.2 Big Data
2. Smart scenarios	2.1 Smart cities 2.2 Smart factory
3. ICT architectures for smart scenarios	3.1 Data source layerç 3.2 Data ingestion, processing and filtering layer 3.3 Data storage layer 3.4 Data analysis layer 3.5 Publishing and visualization layer 3.6 Communications layer 3.7 Authentication, authorization and access control layer
4. Examples of ICT architectures for smart scenarios	4.1 Examples
5. Application development in smart scenarios.	5.1 Context-sensitive applications 5.2 Connection to the Internet of Things (IoT) 5.3 Processing complex events in real time 5.4 Authentication, authorization and access control 5.5 Open data 5.6 Big data analysis 5.7 Dashboard applications 5.8 Real-time multimedia stream processing 5.9 Advanced user experience. 3D Visualization and Augmented Reality 5.10 Cloud Deployment

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A11 A13 A15 A23 A25 A28 C4	21	51	72
Mixed objective/subjective test	A11 A13 A15 A23 A25 A27 A28 B2 B3 B4 B7 B8 B9 B10 C1 C4	3	0	3
ICT practicals	A11 A13 A15 A23 A25 A27 B2 B3 B4 B7 B8 B9 B10 C1	21	51	72
Personalized attention		3	0	3



(*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	Expository sessions of theory, as well as examples and illustrative problems of the subject.
Mixed objective/subjective test	The content of the keynote sessions will be assessed through the final examination.
ICT practicals	Explanation and monitoring of ICT practices on the contents of the subject. The FIWARE platform will be used.

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech ICT practicals	Resolution of doubts about the master sessions and the practices of the subject.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
ICT practicals	A11 A13 A15 A23 A25 A27 B2 B3 B4 B7 B8 B9 B10 C1	It will be evaluated through the working reports on the practices carried out by the student. The delivery dates of the different practice reports will be spaced throughout the semester.	40
Mixed objective/subjective test	A11 A13 A15 A23 A25 A27 A28 B2 B3 B4 B7 B8 B9 B10 C1 C4	The content of the keynote sessions will be assessed through the final exam.	60

Assessment comments
<p>On the second opportunity, only a final exam corresponding to the keynote sessions will be held. The ICT practicals grade will be the one obtained during the course through the continuous evaluation of the student's work.</p> <p>Copying and/or plagiarism: art. 14 section 4b of the UDC regulations will be applied: "Qualification of failure in the exam session in which the offence is committed and with respect to the subject in which it is committed: the student will be qualified with "failure" (numerical grade 0) in the corresponding exam session of the academic year, whether the offence is committed at the first opportunity or at the second opportunity. To this end, the grade will be modified in the first opportunity report, if necessary".</p> <p>All aspects related to ?academic dispensation?, ?dedication to study?, ?permanence? and ?academic fraud? will be governed in accordance with the current academic regulations of the UDC.</p>

Sources of information	
Basic	<ul style="list-style-type: none"> - (). https://www.fiware.org/. - Marz, Nathan; Warren, James (2013). Big Data: Principles and best practices of scalable realtime data systems. Manning Publications
Complementary	

Recommendations
Subjects that it is recommended to have taken before



Parallel Processing/614G02023

Analytic Databases/614G02025

Database Modeling/614G02016

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.