Teaching Guide				
Identifying Data				2024/25
Subject (*)	Administration of Infrastructures and Information Systems		Code	614G01113
Study programme	Grao en Enxeñaría Informática			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Fourth	Optional	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría de Computadores			
Coordinador	Rey Expósito, Roberto	E-mail	roberto.rey.exposito@udc.es	
Lecturers	Rey Expósito, Roberto	E-mail	roberto.rey.exposito@udc.es	
Web	campusvirtual.udc.gal			
General description	O obxectivo desta materia é proporcionar ao alumnado o coñecemento básico necesario para a administración de sistemas informáticos. Isto inclúe a administración e despregamento de infraestruturas servidor e clúster facendo uso de tecnoloxías de virtualización e almacenamento en rede. A orientación da materia é eminentemente práctica, traballando con tecnoloxías, ferramentas e servizos habituais nestas contornas.			

Study programme competences / results	
Code	Study programme competences / results
A52	Capacidade para comprender o contorno dunha organización e as súas necesidades no ámbito das tecnoloxías da información e as comunicacións.
A53	Capacidade para seleccionar, deseñar, despregar, integrar, avaliar, construír, xestionar, explotar e manter as tecnoloxías de hárdware, sóftware e redes dentro dos parámetros de custo e calidade adecuados.
A55	Capacidade para seleccionar, deseñar, despregar, integrar e xestionar redes e infraestruturas de comunicacións nunha organización.
B1	Capacidade de resolución de problemas
B3	Capacidade de análise e síntese
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C8	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		
Capacity to select, design, deploy, integrate, evaluate, build, manage, exploit and maintain the hardware, software and network technologies within appropriate cost and quality parameters.	A52 A53	B1 B3	C6 C8
Capacity for selecting, designing, deploying, integrating and managing infrastructure and network communication infrastructures in an organization.	A52 A55	B1 B3	C6 C8

Contents	
Topic	Sub-topic
Despregamento e administración de infraestrutura	
1. Cloud Computing	Introduction Service Models Deployment Example of a public cloud provider: Amazon Web Services

2. Virtualization	Virtualization Technologies Server Virtualization Container technologies Seminar and exercises on Docker
3. Clusters	Cluster Elements Administration Monitorization Seminar on container clustering Seminar on distributed Big Data infrastructures

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
ICT practicals	A55 A53 B1 B3 C6	21	63	84
Mixed objective/subjective test	A52 A53 A55 B1 B3	3	6	9
Guest lecture / keynote speech	A52 A53 A55 C6 C8	21	31.5	52.5
Personalized attention		4.5	0	4.5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
ICT practicals	Practical exercises on selection, design, deployment, evaluation and management of storage infrastructure, both on premises and on the cloud, to work on the concepts discussed in the classroom.
Mixed objective/subjective test	Test made up of evaluation questions to validate that the students have understandood the theoretical concepts and they know how to put it into practice.
Guest lecture / keynote speech	Classroom presentation on the topics of the subject to transmit knowledge and ease the learning and assimilation process of the discussed concepts.

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech ICT practicals	Solving doubts of the students on the lab exercises. Personalized attention to those students with part-time enrollment or with difficulties to attend lectures due to special circumstances.

Assessment			
Methodologies	Competencies / Results	Description	**Qualification**
ICT practicals	A55 A53 B1 B3 C6	A avaliación das prácticas propostas polo profesorado realizarase de forma continua ao longo do cuadrimestre en función das actividades entregadas debidamente en tempo e forma. Ademais poderán realizarse probas complementarias de avaliación continua sobre os contidos específicos das prácticas nas que o alumnado debe demostrar a asimilación dos conceptos traballados nas sesións prácticas.	50

Mixed objective/subjective test	A52 A53 A55 B1 B3	Ao final do cuadrimestre realizarase un exame individual no período reservado no calendario académico para a avaliación da materia, o cal conterá preguntas relacionadas cós contidos teóricos do temario desenvolvidos durante as sesións maxistrais có obxectivo de avaliar os coñecementos adquiridos polo alumnado.	50

Assessment comments
It is required at least 40% of lab exercises and 40% of the written exam. If these conditions are not met but the final mark (applying the formula) is above 5 then the final mark will be 4 (Fail) out of 10. Thus, an 8 in labs and 3 in examn then the pondered mark is 5.5, but in the academic record of the student it will be specified a 4 (Fail). Failing in June means that there is an opportunity of retake the exam in July, maintaiining the lab qualification. In this case it will be required only a 40% in the written exam and a final note over 5. Part time students will be specially considered in order to support his/jer work. There will be some addtional flexibility and personalized treatment for them.

Sources of information	
Basic	- Kief Morris (2020). Infrastructure as Code, 2nd Edition. O'Reilly - Miguel Darío González Río (2016). Tecnologías de Virtualización. IT Campus Academy - Ulf Troppens, Rainer Erkens, Wolfgang Müller (2009). Storage Networks Explained, 2nd Edition. John Wiley & Sons - Edouard Bugnion, Jason Nieh, Dan Tsafrir (2017). Hardware and Software Support for Virtualization. Springer Cham - Somasundaram Gnanasundaram, Alok Shrivastava (2012). Information Storage and Management, 2nd Edition. John Wiley & Sons
Complementary	- Sam Alapati (2016). Modern Linux Administration: How to Become a Cutting-Edge Linux Administrator. O'Reilly - Luis Joyanes Aguillar (2014). Big Data: Análisis de grandes volúmenes de datos en organizaciones. Marcombo - Tom White (2015). Hadoop: The Definitive Guide, 4th Edition. O'Reilly - Jeff Nickoloff, Stephen Kuenzli (2019). Docker in Action, 2nd Edition. Manning Publications - Mikael Krief (2019). Learning DevOps. Packt Publishing - Marko Luksa (2018). Kubernetes in Action. Manning Publications - Matthew Portnoy (2023). Virtualization Essentials, 3rd Edition. Sybex

Recommendations
Subjects that it is recommended to have taken before
Operating Systems Administration/614G01047 Network Administration/614G01048 Computer Systems Security/614G01079
Subjects that are recommended to be taken simultaneously
Computer Infrastructure Engineering/614G01059
Subjects that continue the syllabus
Other comments
Gender perspectiveAccording to the various applicable regulations for university teaching, a gender perspective will be included in this subject (non-sexist language will be used, bibliography from both genders will be suggested, participation in class of students of both genders will be encouraged, etc.).Efforts will be made to identify and modify sexist, racist, or xenophobic prejudices and attitudes, and influence will be exerted on the environment to change them and promote values of respect and equality.Situations of discrimination on the basis of gender, gender identity, origin, etc. should be detected, and actions and measures will be proposed to correct them.

(*)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.