UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2018/19
Subject (*)	Computer Infrastructure Engineering		Code	614G01059
Study programme	Grao en Enxeñaría Informática			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Fourth	Obligatory	6
Language	Galician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría de Computadores			
Coordinador	Gonzalez Gomez, Patricia	E-mail	patricia.gonzalez@udc.es	
Lecturers	Gonzalez Gomez, Patricia Pardo Martínez, Xoán Carlos	E-mail	patricia.gonzalez@udc.es xoan.pardo@udc.es	
Web				
General description	Esta materia supón unha continuación á materia de Xestión de Infraestructuras, orientada ao estudo de solucións tolerantes a fallas e de alta dispoñibilidade en centros de datos (DC), así como unha introducción ao uso de tecnoloxías de virtualización nos DC e a sua utilización no despregamento de servicios na nube (cloud computing).			

Study programme competences / results	
Code	Study programme competences / results
A36	Capacidade para comprender, aplicar e xestionar a garantía e a seguridade dos sistemas informáticos.
A37	Capacidade para analizar, avaliar, seleccionar e configurar plataformas hárdware para o desenvolvemento e execución de aplicacións e servizos informáticos.
B1	Capacidade de resolución de problemas
B3	Capacidade de análise e síntese
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.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Know the software and hardware systems that allow the implementation of fault tolerant solutions	A36 A37	B1 B3	C3 C6
Know how to plan the deployment, migration and start-up of computer infrastructures	A36 A37	B1 B3	C3
Know the operation of the techniques of monitoring and administration of computer infrastructures	A36 A37	B1	C3 C6
Know how to properly dimension the IT infrastructures according to the design requirements	A37	B1	C3 C6

Contents	
Topic	Sub-topic
Module I: High Availability Data Center Architectures	1.- Introduction to High Availability (HA) 2.- Architecture of a Data Center 3.- Servers of a Data Center for HA 4.- Clusters of a Data Center for HA

Module II: Virtualization and Cloud Computing	1.- Virtualization technologies 2. Virtualization of the Data Center 3.- Computing in the Cloud (Cloud Computing)

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Laboratory practice	B1 C3	14	42	56
Objective test	A36 A37	3	0	3
Supervised projects	A37 B3 C6	6	18	24
Guest lecture / keynote speech	A36 A37 C6	21	42	63
Personalized attention		4	0	4
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Laboratory practice	Activity that allows students to learn and consolidate the knowledge already acquired through the realization of practical sessions in computers.
Objective test	Test that will be done at the end of the semester, on the contents of the lectures and the laboratory practices.
Supervised projects	Resolution of a study case of greater difficulty to those made in the practices, studying in greater depth a specific application directly related to the contents of the subject. A report on the work carried out must be submitted, summarizing the main conclusions of it.
Guest lecture / keynote speech	Presentation complemented with the use of audiovisual media and the introduction of debate phases with the students. All this in order to transmit knowledge and facilitate learning.

Personalized attention	
Methodologies	Description
Laboratory practice Supervised projects	Personalized attention during the laboratories will be used to guide and verify the work that students are doing according to the instructions given to them, depending on the specific lab. All the lecturers will also propose a tutorial schedule in which the students can solve any doubt. The tutorials are recommended as a fundamental part of the learning support.

Assessment			
Methodologies	Competencies / Results	Description	**Qualification**
Laboratory practice	B1 C3	As prácticas de laboratorio consistirán en diferentes actividades que se proporán ao longo do cuadrimestre relacionadas cos contidos da materia.	40
Objective test	A36 A37	A proba obxectiva realizarase ao final do cuadrimestre e estará formada por preguntas relacionadas co temario desenvolvido nas sesións maxistrais e nas prácticas.	40
Supervised projects	A37 B3 C6	O traballo tutelado consistirá na resolución de un caso de estudio de maior dificultade aos realizados nas prácticas	20

Assessment comments

FIRST OPPORTUNITYThe subject consists of two clearly differentiated modules. Each module will propose practices (laboratory practices and / or supervised work). To pass the practices it will be mandatory to submit all of them.The final mark will be calculated as the weighted average of the practice marks (laboratory practices and / or supervised work) and the objective test mark. To pass it, it will be necessary to reach at least 40% in each one of the marks and 50% in the average.SECOND OPPORTUNITYIn the second opportunity, the same assessment criteria will be followed. There will be a second submission date for the practices, and the marks of those parts that have reached a minimum of 40% at the first opportunity will be conserved for the second opportunity.STUDENTS AT PART TIMEThe assessment will be the same as that of full-time students.FRAUDIn the case of detecting any fraud in the evaluation tests, the sanctioning measures provided for in the university regulations will be applied.

Sources of information	
Basic	1. Kailash Jayaswal (2006)."Administering Data Centers: Servers, Storage, and Voice over IP". Wiley. ISBN: 978-0-471-77183-8 2. Sander Van Vugt (2014)."Pro Linux high availability clustering".Apress. ISBN:978-1484200803 3. Germán Pacio (2015). "Data Centers Hoy". Marcombo. ISBN: 978-8-42672-156-34. Luís Joyanes Aguilar (2013). "Computación en la Nube: Estrategias de Cloud Computing en las Empresas". Marcombo. ISBN: 978-8-42671-893-8
Complementary	1. Hwaiyu Geng (2015). "Data Center Handbook". Wiley. ISBN: 978-1-118-43663-92. Gustavo Santana (2014). "Data Center Virtualization Fundamentals". Cisco Press. ISBN: 978-1-58714-324-3 1. Hwaiyu Geng (2015). "Data Center Handbook". Wiley. ISBN: 978-1-118-43663-92. Gustavo Santana (2014). "Data Center Virtualization Fundamentals". Cisco Press. ISBN: 978-1-58714-324-3

Recommendations
Subjects that it is recommended to have taken before
Infrastructure Management/614G01025 Computer Architecture/614G01033
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Administration of Infrastructures and Information Systems/614G01093
Other comments
For the mention of Information Technology, in which this subject is optional in the 2nd term, it is recommended to attend simultaneously the subject: "Infrastructure Administration and Information Systems - AISI - (614G01216)".

(*)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.