



IDENTIFYING DATA

Computer Systems

Subject	Computer Systems			
Code	P52M182V01305			
Study programme	Master Universitario en Dirección TIC para la defensa			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Optional	2nd	1st
Teaching language				
Department				
Coordinator	González Coma, José Pablo			
Lecturers	González Coma, José Pablo			
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Web				
General description				

Skills

Code	
A6	CB6 - Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
A7	CB7 - That students know how to apply the acquired knowledge and their ability to solve problems in new or poorly understood environments within broader (or multidisciplinary) contexts related to their area of study.
A8	CB8 - That students are able to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.
A9	CB9 - That students know how to communicate their conclusions and the knowledge and ultimate reasons that support them to a specialized and unspecialized public in a clear and unambiguous way.
A10	CB10 - That students possess the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.
B1	CG1 - Possess advanced and highly specialized knowledge and demonstrate a detailed and well-founded understanding of the theoretical and practical aspects dealt with in the different areas of study.
B2	CG2 - Integrate and apply the knowledge acquired, and possess the ability to solve problems in new or imprecisely defined environments, including multidisciplinary contexts related to their field of study.
C15	CIST11 - Define and implement different computing systems in line with technological evolution and deployment environments.
D4	CT4 - Oral and written communication skills.
D5	CT5 - Autonomous learning and work.

Learning outcomes

Expected results from this subject	Training and Learning Results
LO1 - Know the fundamental concepts associated with the architecture, design, management, and deployment of advanced computing infrastructures, such as computing clusters, high integrity systems, virtualized systems, and cloud computing.	A6 A7 A8 A9 A10 B1 B2 C15 D4 D5

LO2 - Be able to analyze the performance of computer systems.

A6
A7
A8
A9
A10
B1
B2
C15
D4
D5

LO3 - Know the main concepts related to the design and implementation of hardware and software computer systems with specific requirements, such as embedded systems and real-time systems.

A6
A7
A8
A9
A10
B1
B2
C15
D4
D5

Contents

Topic

Introduction to computing	<ul style="list-style-type: none"> - Introduction to computing - Historical development - Algorithms and computational theory - Computer architecture - Planning policies
Quality parameters and system performance analysis	<ul style="list-style-type: none"> - Computer characteristics - Performance analysis
Computer clusters	<ul style="list-style-type: none"> - Types of clusters - Cluster components
Virtualization	<ul style="list-style-type: none"> - Virtualization mechanisms - Types of hypervisors - Advantages of virtualization
Cloud computing	<ul style="list-style-type: none"> - Reference models - Types of deployments - Products and suppliers - Advantages and disadvantages
Fault-tolerant and high-availability systems	<ul style="list-style-type: none"> - Introduction: Reliability, failures, faults, and errors - Failure prevention - Fault tolerance - Redundancy
Real-time architectures	<ul style="list-style-type: none"> - Types of systems - Hardware architectures - Software architectures - Real-time operating systems
Embedded systems	<ul style="list-style-type: none"> - Characteristics of embedded systems - Architecture - Platforms

Planning

	Class hours	Hours outside the classroom	Total hours
Previous studies	0	25	25
Lecturing	8	8	16
Seminars	1	0	1
Discussion Forum	0	5	5
Presentation	6	0	6
Objective questions exam	2	0	2
Essay	0	20	20

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

Description

Previous studies	Search, reading, documentation work, and/or autonomously performing any other activity that the student considers necessary to enable the acquisition of knowledge and skills related to the subject. It is usually carried out before classes and/or evaluation tests.
Lecturing	Presentation by a lecturer of the contents of the subject of study, theoretical bases and/or guidelines of a work or exercise that the student has to develop.
Seminars	Activity focused on working on a specific topic, which allows to deepen or complement the contents of the subject
Discussion Forum	Activity developed in a virtual environment in which diverse and current topics related to the academic and/or professional field are discussed.

Personalized assistance

Methodologies Description

Lecturing	It will be carried out through the use of telematic means. Students who wish to do so may ask questions to the lecturer in forums or by e-mail. They will also be able to arrange individual tutorials with him, which will be held by videoconference.
Seminars	Although it is still possible to use telematic mechanisms for student attention, in this case, face-to-face tutoring mechanisms will also be used.

Assessment

	Description	Qualification	Training and Learning Results			
Presentation	Presentation by the students, individually or in groups, of a topic related to the contents of the subject or of the results of work, exercise, project, etc. Through the presentation, knowledge, skills, and aptitudes can be evaluated.	10	A6 A7 A8 A9 A10	B1 B2	C15	D4 D5
Objective questions exam	A test that evaluates knowledge and includes closed questions with different answer alternatives (true or false, multiple-choice, item matching, etc.). Students select an answer from a limited number of possibilities.	70	A6 A7 A8 A9 A10	B1 B2	C15	D4 D5
Essay	Text or document elaborated on a topic that must be written following established rules of style and length. It allows the evaluation of the student's skills, knowledge, and, to a lesser extent, aptitudes.	20	A6 A7 A8 A9 A10	B1 B2	C15	D4 D5

Other comments on the Evaluation

It will be necessary to reach 50% of the qualification in order to pass the course. A continuous evaluation mechanism will be used, with which it is intended to monitor the evolution of the student throughout the course, assessing their effort globally. There will be two written tests: one at the beginning of the face-to-face phase, in which the contents taught in the distance phase will be evaluated, which will represent 30% of the grade; and one at the end of the face-to-face phase, in which all the contents of the course will be evaluated (including the contents of the distance phase and the presential practices), which will represent 40% of the grade. In the event that the student does not manage to pass the course in the ordinary evaluation, he/she will have the right to a second evaluation opportunity (extraordinary evaluation) which will be performed in the distance mode on the dates established for this purpose by the Master's Academic Committee. In this case, the evaluation will consist of a single written test that will account for 100% of the grade, being necessary to obtain at least 50% to pass the course. Fraud or attempted fraud on the part of the student in the evaluation process (copying or plagiarism or its facilitation to third parties) will be penalized by giving the student a grade of 0 in the exam session in which it occurs. Páxina 4 de 4 In the case of any difference between the Galician/Spanish/English guides related to the evaluation, the Spanish guide will always prevail.

Sources of information

Basic Bibliography

Complementary Bibliography

- Buyya, Rajkumar, Christian Vecchiola, y S. Thamarai Selvi., **Mastering cloud computing: foundations and applications programming.**, 1ª Ed., Newnes,, 2013
- Rauber, Thomas, y Gudula Rüniger., **Parallel programming: For multicore and cluster systems.**, 2ª Ed., Springer Science & Business Media, 2013
- Wolf, Marilyn, **Computers as components: principles of embedded computing system design**, 3ª Ed., Elsevier, 2012
- Joyanes Aguilar, Luis., **Computación en la Nube: estrategias de cloud computing en las empresas**, 1ª Ed., Marcombo, 2012

Recommendations

Other comments

It is advisable for students taking this course to have a basic knowledge of the operation of computer systems.
