



IDENTIFYING DATA

Services and software applications

Subject	Services and software applications			
Code	P52M182V01206			
Study programme	Master Universitario en Dirección TIC para la defensa			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Optional	1st	2nd
Teaching language	Spanish			
Department				
Coordinator	Fernández Gavilanes, Milagros			
Lecturers	Fernández Gavilanes, Milagros			
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General description	The subject of Software Services and Applications aims to provide students with a generalised vision of the concepts of distributed applications, client-server models and web services, with special emphasis on the development and management methodologies currently in force.			

Training and Learning Results

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.
B3	CG3 - Direct, plan, coordinate, organize and/or supervise tasks, projects and/or human groups. Work cooperatively in multidisciplinary teams acting, where appropriate, as an integrator of knowledge and lines of work.
C17	CIST13 - Define and implement technologies and methodologies in the development of systems, applications and software services in web, distributed, mobile environments, etc.
D4	CT4 - Oral and written communication skills.
D5	CT5 - Autonomous learning and work.

Expected results from this subject

Expected results from this subject	Training and Learning Results
LO1: Know the existing web engineering methodologies.	A8 B1 B2 B3 C17

LO2: Understand the inner workings of a web service, and the different technologies currently available to implement them.	A7 B1 B2 B3 C17 D4 D5
LO3: Understand the basic principles of distributed computing and systems and their differences with centralised systems.	B1 B2 B3 C17
LO4: Understand the concept of middleware and its basic principles of operation.	B1 B2 B3 C17
LO5: Know the basics of distributed application programming, and the different existing technologies.	A10 C17 D4 D5
LO6: Know the basic fundamentals of mobile applications for the different existing operating systems.	A6 A9 C17 D4 D5

Contents

Topic	
Topic 1: Introduction to web engineering.	- Introduction and salient features - Web engineering vs. software engineering - Basic elements of the Web - Historical perspective
Topic 2: Technology and web services.	- Introduction - Dynamic web services vs. static websites - Basic characteristics - Architecture of a web service - Most common technologies: frontend and backend
Topic 3: Distributed systems.	- Most common architectures - Client-Server Model - Multi-layer architectures - P2P and Grid architectures
Topic 4: Web development and management methodologies.	- General characteristics - Traditional methodologies vs. Agile methodologies - Phases of the development process - Development methodologies
Topic 5: Middleware technologies.	- Introduction and fundamental concepts - Applications - Typology and most relevant characteristics
Topic 6: Technologies applicable to the development of distributed applications.	- Most common technologies - Others
Topic 7: Applications on mobile devices.	- Generic characteristics of the most important mobile operating systems - Native applications vs. web applications - Security - Ubiquitous computing

Planning

	Class hours	Hours outside the classroom	Total hours
Previous studies	0	40	40
Lecturing	8	10	18
Discussion Forum	0	2	2
Practices through ICT	4	0	4
Self-assessment	0	2	2
Objective questions exam	1	0	1
Presentation	4	3	7
Essay questions exam	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	
	Description
Previous studies	Research, reading, documentation work and/or autonomous performance of any other activity that the student considers necessary to enable him/her to acquire knowledge and skills related to the subject. This is usually carried out prior to classes, laboratory practices and/or assessment tests.
Lecturing	Presentation by a lecturer of the contents of the subject under study, theoretical bases and/or guidelines for a project or exercise that the student has to carry out.
Discussion Forum	Activity carried out in a virtual environment in which a debate is held on a variety of current topics related to the academic and/or professional field.
Practices through ICT	Activities involving the application of knowledge in a given context and the acquisition of basic and procedural skills in relation to the subject, through the use of ICT.

Personalized assistance

Methodologies	Description
Lecturing	Given the blended nature of the course, we will distinguish two cases: (1) Attention in the distance phase: it will be carried out through the use of telematic means. Students who wish to do so may raise questions to the faculty in forums or by email. They will also be able to arrange individual tutorials with the lecturer, which will take place via videoconference. (2) Attention in the face-to-face phase: although the use of telematic mechanisms is still possible, during this phase face-to-face tutoring mechanisms will also be used.
Practices through ICT	Attention in the face-to-face phase: Although it is still possible to use telematic mechanisms for student attention, face-to-face tutoring mechanisms (individual and/or group) will also be used during this phase.

Assessment

	Description	Qualification	Training and Learning Results			
Discussion Forum	Activity carried out in a virtual environment where a variety of current issues related to the academic and / or professional field are debated. It allows evaluating the skills, knowledge and, to a lesser extent, the attitudes of the student. Participation in the forums (F) carried out during the distance phase will be evaluated.	10	A6 A7 A8 A9 A10	B1 B2	C17	D4 D5
Self-assessment	A mechanism in which, by means of a series of questions or activities, it is possible for the student to autonomously evaluate his/her degree of acquisition of knowledge and skills on the subject, allowing self-regulation of the personal learning process. To be assessed (AV) during the distance phase.	30	A7	B1 B2	C17	D4
Objective questions exam	A test that assesses 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. This test (EO) will take place during the face-to-face phase.	25	A6 A8 A9 A10	B1 B2 B3	C17	D4 D5
Presentation	Presentation by the students, individually or in groups, of a topic related to the contents of the course or the results of a work, exercise, project, etc. Through the presentation, knowledge, skills and attitudes can be evaluated. Esta actividad de presentación (P) se realizará en la fase a distancia.	20	A6 A7 A8 A9 A10	B1	C17	D4 D5
Essay questions exam	Test (EP) that assesses knowledge and includes open-ended essay questions about the practices carried out during the face-to-face phase.	15	A6 A7 A8 A9 A10	B1 B2 B3	C17	D4 D5

Other comments on the Evaluation

We call the average continuous assessment mark MED_CON, which is calculated as:

$$\text{MED_CON} = 0.1 * F + 0.3 * AV + 0.25 * EO + 0.2 * P + 0.15 * EP$$

A minimum mark of 50% is required to pass the course.

If the subject is not passed in the ordinary call, there will be a second opportunity to pass it in the extraordinary call, which will be held in distance mode on the dates established for this purpose by the Master's Academic Committee. The assessment process in this second call would be carried out as indicated below:

Self-assessment activities (test-theory) - 60%.

Self-assessment activities (test-practical) - 40%.

ACADEMIC INTEGRITY:

Students are expected to show adequate ethical behaviour, committing to act honestly. Based on article 42.1 of the *Regulation on the evaluation, qualification and quality of teaching and the student learning process of the University of Vigo*, **any violation of academic integrity in the assessment process, as well as the cooperation in it will result in the assignment of a failing grade to the student (zero) for the entire course in the corresponding assessment opportunity**, regardless of the percentage of importance that the test in question had in the overall continuous assessment and independently of other disciplinary actions that may be applied.

In the event of any discrepancies between the guides in Galician/Spanish/English regarding evaluation, the indications stated in the Spanish version of the course guide will always prevail.

Sources of information

Basic Bibliography

Complementary Bibliography

A. S. Tanenbaum, **Redes de computadoras**, Pearson, 2013

Qusay H. Mahmoud, **Middleware for Communications**, John Wiley & Sons, 2004

Joseph Ingeno, **Software Architect's Handbook**, 1^o, Packt Publishing, 2018

Recommendations

Subjects that it is recommended to have taken before

Networks and telecommunication systems/P52M182V01104