



## IDENTIFYING DATA

### (\*)Tecnoloxías de Aplicación

Subject	(*)Tecnoloxías de Aplicación			
Code	V05M145V01105			
Study programme	(*)Máster Universitario en Enxeñaría de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Mandatory	1st	1st
Teaching language	Spanish			
Department				
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General description	Students will obtain a global picture of the main technological resources to design telematics applications. Basic problems like distributed computing, interoperability and services discovering will be addressed. These concepts will be study in the framework of the cloud computing paradigm.			

## Competencies

Code				
A5	CB5 Students must have learning skills to allow themselves to continue studying in largely self-directed or autonomous way			
A6	CG1 The ability to project, calculate and design products, processes and facilities in telecommunication engineering areas.			
A9	CG4 The capacity for mathematical modeling, calculation and simulation in technological centers and engineering companies, particularly in research, development and innovation tasks in all areas related to Telecommunication Engineering and associated multidisciplinary fields.			
A13	CG8 The ability to apply acquired knowledge and to solve problems in new or unfamiliar environments within broader and multidiscipline contexts, being able to integrate knowledge.			
A17	CG12 To have skills for lifelong, self-directed and autonomous learning.			
A22	CE4 The ability to design and plan networks for transporting, broadcasting and distribution of multimedia signals.			
A26	CE8 The ability to understand and know how to apply the operation and organization of the Internet, new generation Internet technologies and protocols, component models, middleware and services.			
A27	CE9 The ability to solve convergence, interoperability and design of heterogeneous networks with local, access and trunk networks; as well as the integration of telephonic, data, television and interactive services.			

## Learning aims

Expected results from this subject	Typology	Training and Learning Results
Students must have learning skills to allow themselves to continue studying in largely self-directed or autonomous way	Know How	A5
The ability to project, calculate and design products, processes and facilities in telecommunication engineering areas.	Know How	A6
The capacity for mathematical modeling, calculation and simulation in technological centers and engineering companies, particularly in research, development and innovation tasks in all areas related to Telecommunication Engineering and associated multidisciplinary fields.	Know How	A9
The ability to apply acquired knowledge and to solve problems in new or unfamiliar environments within broader and multidiscipline contexts, being able to integrate knowledge.	Know How	A13

The ability to apply acquired knowledge and to solve problems in new or unfamiliar environments within broader and multidiscipline contexts, being able to integrate knowledge.	know Know How	A17
The ability to design and plan networks for transporting, broadcasting and distribution of multimedia signals.	Know How	A22
The ability to understand and know how to apply the operation and organization of the Internet, new generation Internet technologies and protocols, component models, middleware and services.	Know How	A26
The ability to solve convergence, interoperability and design of heterogeneous networks with local, access and trunk networks; as well as the integration of telephonic, data, television and interactive services.	Know How	A27
Know the different communication techniques for distributed computing	know	A17
Proper application of the communication techniques for distributed computing	Know How	A13
Know the techniques for data sharing to enable interoperability	know	A17
Proper application of the techniques of data sharing to enable interoperability	Know How	A6
Know how to specify software services	know	A17
Proper use of the software services specification	Know How	A6
Know how to discover software services	know	A17
Proper use of the software services discovering techniques	Know How	A13
Know the basics of services virtualization	know	A17
Proper use of the basis of services virtualization	Know How	A13

## Contents

Topic		
1. Cloud computing: overview	a. Service models (IaaS, PaaS, SaaS) and deployment models b. Reference architectures for cloud applications: virtualization c. Data storage approaches d. Commercial cloud platforms	
2. Data management	a. Choosing data store types b. Data storage approaches c. Distributed File Systems	
3. Distributed computing	a. Services composition: orchestration and choreography b. Distributed transactions c. Parallel computing: MapReduce	
4. Practical issues in the cloud	a. Load balancing b. Scalability c. Security d. Parallel computing	

## Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	3	21	24
Master Session	32	34	66
Practical tests, real task execution and / or simulated.	3	30	33
Short answer tests	2	0	2

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

## Methodologies

	Description
Laboratory practises	Students will design and develop small prototypes and software solutions to reinforce the theoretical concepts explained in master sessions.  (competencies A13, A22, A26, A27)
Master Session	Teachers will combine both concepts explanation and toy examples resolution. Resolution of small situations at class will foster debates, especially if it is done in groups.  (competencies A6, A9, A5, A17)

## Personalized attention

Methodologies	Description
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Master Session	Students will be organized in groups to develop different software solutions. Each group will be weekly monitored in order to assess their progress and receive personalized recommendations about their solutions.
Laboratory practises	Students will be organized in groups to develop different software solutions. Each group will be weekly monitored in order to assess their progress and receive personalized recommendations about their solutions.

Assessment		
	Description	Qualification
Practical tests, real task execution and / or simulated.	Students will be organized in groups. Each group will design and implement software solutions for different small problems.  (competencies A13, A22, A26, A27)	40
Short answer tests	Written exam which combines test and short answer questions. No extra material is allowed.  (competencies A6, A9, A5, A17)	60

### Other comments on the Evaluation

Students can follow up a continuous assessment model or decide to do a final exam. This selection should be done by 6th week. Once a student selects "continuous evaluation" his/her mark will never be "not taken".

#### 1- CONTINUOUS ASSESSMENT

Final mark within this assessment schema will be composed by adding the marks obtained after the assessment of the following assignments:

- Writing exam
  - Dates: official calendar
  - Individual
  - Maximum score = 6 points
  - Minimum score required to pass = 3 points
- 3 intermediate practical assignments
  - Dates: 6th week, 9th week, 13th week
  - Groups
  - Maximum score = 4 points

#### 2- FINAL EXAM

Final mark within this assessment schema will be composed by adding the marks obtained after the assessment of the following assignments:

- Writing exam
  - Dates: official calendar
  - Individual
  - Maximum score = 6 points
  - Minimum score required to pass = 3 points
- 1 practical assignment
  - Dates: last week
  - Individual
  - Maximum score = 4 points

#### 3- EXTRAORDINARY ASSESSEMENT

Students will be assessed using the "final exam" schema.

### Sources of information

#### 4.1 Basic bibliography

[2] *Architecting the cloud*. Michael J. Kavis. 2010, Wiley

#### **4.2 Complementary bibliography**

[1] *"Cloud computing: principles and paradigms"*. Rajkumar Buyya, James Broberg, Andrzej Goscinski. 2014, Wiley.

[3] *Cloud Computing Bible*. Barrie Sosinsky. 2010, John Wiley & Sons

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#### **Recommendations**

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