

LEARNING GUIDE

Information for the student

Descriptive Data

COURSE:	Ubiquitous and Secure Networks and Services (Redes y servicios ubicuos y seguros)
SUBJECT:	Telematics
ECTS:	5
CHARACTER:	Compulsory (professional itinerary) / Optional (research itinerary)
TITLE:	MSc in Systems and Services Engineering for the Information Society
COURSE:	1st course, 1st semester
SPECIALIZATION:	-

ACADEMIC YEAR	2010-2011		
TEACHING PERIOD	September-January	February-June	
	X		
LANGUAGE	Spanish	English	Both
		X	

DEPARTMENT:	Departamento de Ingeniería y Arquitecturas Telemáticas (Department of Telematic Engineering and Architectures)	
LECTURERS		
NAME (C = Coordinator)	ROOM	e-mail
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PREVIOUS REQUIRED BACKGROUND TO FOLLOW THE COURSE	
APPROVED COURSES	<p>Any of the following graduates (or students with demonstrable equivalent knowledge) may access this course:</p> <ul style="list-style-type: none"> • Graduate in Communication Electronics Engineering (Graduado en Ingeniería de Electrónica de Comunicaciones) • Graduate in Telecommunication Systems Engineering (Graduado en Ingeniería de Sistemas de Telecomunicación) • Graduate in Sound and Image Engineering (Graduado en Ingeniería de Sonido e Imagen) • Graduate in Telematic Engineering (Graduado en Ingeniería Telemática)
OTHER REQUIRED LEARNING RESULTS	

Learning Objectives

COMPETENCES AND COURSE ASSIGNED LEVEL		
Code	COMPETENCE	LEVEL
CGEN.2	Be capable of performing independent learning during their professional career.	L4
CGEN.6	Be capable of projecting, calculating and designing systems and services for the Information Society.	L4
CGEN.8	Be capable of applying and integrating the acquired knowledge to solve problems in new environments, inside broader and multidisciplinary contexts, in the framework of their expertise area.	L5
CGEN.9	Be capable of performing research, development and innovation activities in the context of the Information Society.	L5
CESE.5	Be capable of developing systems that offer ubiquitous and secure services.	L5
CEI.2	Be capable of critically interpreting and assessing scientific documents in the area of the Information and Communication Technologies.	L5
CEI.3	Be capable of communicating and disseminating their research results.	L4

Code	COURSE LEARNING RESULTS
LR01	Classify the ubiquitous services and applications according to their technical characteristics.
LR02	Explain the technological characteristics of the architectures, platforms, networks and protocols that offer ubiquitous services and applications.
LR03	Analyze the security threats to be considered in a ubiquitous system, according to both the application/service and the network environment.
LR04	Assess the security methods to neutralize the threats present in a ubiquitous system.
LR05	Design a system that offers a ubiquitous application or service, having a set of specifications and technical requirements as input.
LR06	Implement a ubiquitous system, having its design as input.

Contents and Learning Activities

SPECIFIC CONTENTS		
LECTURE / UNIT	EPIGRAPH	Related indicators
Unit 1	1: Introduction to ubiquitous systems	LR01
	1.1: Ubiquitous / pervasive computing	
	1.2: Network aspects and deployment in ubiquitous systems	
	1.3: Future Internet: Internet of Things, Internet of Services, Internet of People	
Unit 2	2: Applications and services	LR02
	2.1: Types of ubiquitous services: context-aware services, social networks, embedded systems, ambient intelligence.	
	2.2: Applications to offer ubiquitous services	
	2.3: Man-machine interfaces	
Unit 3	3: Types of ubiquitous systems: Architectures and platforms	LR02
	3.1: Wireless Sensor Networks (WSN)	
	3.2: Ad-hoc networks	
	3.3: Personal- and body-area networks	
Unit 4	4: Network technologies	LR02
	4.1: Network protocols	
	4.2: Communication models	
	4.3: Routing	
	4.4: Quality of Service (QoS)	
Unit 5	5: Ubiquitous systems security	LR03, LR04
	5.1: Vulnerabilities of ubiquitous networks and services	
	5.2: Cryptographic mechanisms as the basis of the security	
	5.3: Intrusion detection	
Unit 6	6: Project	LR05, LR06
	6.1: Design, implementation and deployment of an ubiquitous application / service	

BRIEF DESCRIPTION OF THE ORGANIZATIVE MODALITIES USED AND EMPLOYED LEARNING METHODS

THEORY	For each one of the first five units (1 to 5) there will be an introductory session made by a teacher, with the objectives of giving a general technological overview of the topic, providing extra recommended bibliography, ensuring that the students get at least a minimum common ground and establishing the main vocabulary and concepts.
CASE STUDY	The students will be presented with scientific and technological documents and papers related with units 1 to 5. These papers will give a more specific or thorough vision on some topic. After reading the document, the students may be asked to discuss it in groups, to make a brief presentation on their understanding of the topic and / or to write a summary.
LABORATORY	Unit 6 consists on the development of a complete project, for which the students will have to perform the design and the subsequent implementation and deployment of a system, having a set of requirements as input. This will require a considerable amount of time spent in the laboratory, especially for the phases of implementation, deployment, validation and testing of their project(s).
AUTONOMOUS WORK	Each student will have to spend time on reading documents, searching for information, performing the part of the group work they have been assigned with, and in general assessing that they have grasped the main concepts, knowledge and abilities that will allow them to demonstrate their competence for passing the course evaluation.
GROUP WORK	There are two main activities that will require group work: the project related with unit 6, and a research work that will be proposed by the teachers on specific subjects, and that will consist on writing a report and presenting it orally. Students will have to work in groups for reaching a consensus and a common understanding of the work to perform, assigning tasks to each of the members, putting in common their work, integrating their results and preparing the corresponding presentations and written reports.
SUPERVISION	Groups of students will be tutored by the teachers on specific pre-scheduled sessions. This will allow the students to ask questions, raise the problems they have not autonomously been able to solve and receive advice on how to continue or tailor their work for the future.

DIDACTICAL RESOURCES	
BIBLIOGRAPHY	Basic books .
	Basic papers (will be uploaded to the Moodle space of the course).
WEB RESOURCES (Institutional Platform)	Moodle platform. URL .
LABORATORY EQUIPMENT	Personal computers: at least one per student during the laboratory sessions.
	Specific equipment (WSN nodes + development environment).

Course work chronogram

Unit 1				
Week 01				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 02				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 03				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 04				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 05				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 06				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 07				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 08				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 09				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 10				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 11				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 12				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 13				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 14				
Activity	Hours	Place	Methodology	Assessment
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Unit XXX				
Week 15				
Activity	Hours	Place	Methodology	Assessment
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Course assessment and evaluation system

EVALUATION

CUMULATIVE ASSESSMENT				
Evaluated activity	Unit	Week	Place	Assessment weight
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QUALIFICATION CRITERIA

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