



## 1. General information

**Course:** WIRELESS DEVICES AND NETWORKS**Type:** ELECTIVE**Degree:** 406 - UNDERGRADUATE DEGREE IN COMPUTER SCIENCE AND ENGINEERING (AB)**Center:** 604 - SCHOOL OF COMPUTER SCIENCE AND ENGINEERING (AB)**Year:** 4**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 42371**ECTS credits:** 6**Academic year:** 2023-24**Group(s):** 17**Duration:** C2**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** FRANCISCO MANUEL DELICADO MARTINEZ - Group(s): 17

Building/Office	Department	Phone number	Email	Office hours
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## 2. Pre-Requisites

Not established

## 3. Justification in the curriculum, relation to other subjects and to the profession

Not established

## 4. Degree competences achieved in this course

## Course competences

Code	Description
IC08	Ability to design, develop, manage, and administrate computer networks.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
SIS05	Creativity.
TI04	Ability to select, design, develop, integrate, and manage communication networks and infrastructures in a organisation.
TI06	Ability to foster systems, applications, and services based on network technologies, including the internet, web, electronic commerce, multimedia, interactive services, and mobile computation.

## 5. Objectives or Learning Outcomes

## Course learning outcomes

Description

Creation of client / server applications for PDAs.

Development of applications for mobile devices.

Installation and configuration of applications on specific networks, such as sensor networks.

Knowledge about the architectures, operating principles and hardware and software components of specific networks, such as sensor networks.

Provision of security and authentication to a wireless network.

Ability to choose and use the most appropriate wireless communication protocol.

## 6. Units / Contents

## Unit 1:

Unit 1.1

Unit 1.2

## Unit 2:

Unit 2.1

Unit 2.2

## Unit 3:

Unit 3.1

## Unit 4:

Unit 4.1

Unit 4.2

## Unit 5:

Unit 5.1

Unit 5.2

## Unit 6:

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD)	ECTS	Hours	As	Com	Description
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		822/2021)					
Class Attendance (theory) [ON-SITE]	Lectures	IC08 TI04 TI06	0.5	12.5	N	-	
Writing of reports or projects [OFF-SITE]	Project/Problem Based Learning (PBL)	IC08 SIS05 TI04 TI06	3	75	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	IC08 TI04 TI06	0.6	15	N	-	
Other on-site activities [ON-SITE]	Assessment tests	INS05 TI04 TI06	0.1	2.5	Y	Y	
Computer room practice [ON-SITE]	Cooperative / Collaborative Learning	INS05 SIS05	1.8	45	Y	Y	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Laboratory sessions	30.00%	30.00%	
Projects	60.00%	60.00%	
Oral presentations assessment	10.00%	10.00%	
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

## 9. Assignments, course calendar and important dates

### Not related to the syllabus/contents

Hours	hours
<b>Unit 1 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other on-site activities [PRESENCIAL][Assessment tests]	.3
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	9
<b>Unit 2 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3.8
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other on-site activities [PRESENCIAL][Assessment tests]	.4
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	9
<b>Unit 3 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other on-site activities [PRESENCIAL][Assessment tests]	.5
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	6
<b>Unit 4 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other on-site activities [PRESENCIAL][Assessment tests]	.5
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	10
<b>Unit 5 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3.7
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other on-site activities [PRESENCIAL][Assessment tests]	.5
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	11
<b>Unit 6 (de 6):</b>	
<b>Activities</b>	<b>Hours</b>
Writing of reports or projects [AUTÓNOMA][Project/Problem Based Learning (PBL)]	75
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Other on-site activities [PRESENCIAL][Assessment tests]	.3
<b>Global activity</b>	
<b>Activities</b>	<b>hours</b>
Computer room practice [PRESENCIAL][Cooperative / Collaborative Learning]	45

Class Attendance (theory) [PRESENCIAL][Lectures]	12.5
Writing of reports or projects [AUTÓNOMA][Project/Problem Based Learning (PBL)]	75
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Other on-site activities [PRESENCIAL][Assessment tests]	2.5
<b>Total horas:</b>	<b>150</b>

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
The Things Networks	Learn   The Things Networks <a href="https://www.thethingsnetwork.org/docs/">https://www.thethingsnetwork.org/docs/</a>					
Bluetooth SIG, Inc	Bluetooth Technology Overview <a href="https://www.bluetooth.com/learn-about-bluetooth/tech-overview/">https://www.bluetooth.com/learn-about-bluetooth/tech-overview/</a>					
The ThingsBoard Authors	ThingsBoard Documentation <a href="https://thingsboard.io/docs/">https://thingsboard.io/docs/</a>					
FIWARE Foundation	NGSI-V2 Step-By-Step <a href="https://fiware-tutorials.readthedocs.io/en/latest/">https://fiware-tutorials.readthedocs.io/en/latest/</a>					
Academia de Networking de Cisco Systems	Fundamentos de Redes Inalámbricas <a href="http://ciscopress.com">ciscopress.com</a>	Pearson Educación		978-84-8322-287-4	2009	Texto básico para la asignatura, que abarca la totalidad del temario.
Krishna Sankar, Sri Sundaralingam, Darrin Miller	Cisco Wireless LAN Security	Cisco Press		978-1-58705-154-8	2004	Texto opcional para la asignatura, que profundiza en aspectos de seguridad en redes WiFi.
Kevin Townsend, Carles Cufí, Akiba Robert Davidson	Getting starting with Bluetooth Low Energy: tools and techniques for low-power networking	O'Reilly Media		978-1491949511	2014	Texto opcional para el seguimiento de la temática Bluetooth.
MQTT.org	MQTT: The Standard for IoT Messaging <a href="https://mqtt.org/">https://mqtt.org/</a>					
Carsten Bormann	CoAP - Constrained Application Protocol <a href="https://coap.technology/">https://coap.technology/</a>					