



## Teaching Guide

Identifying Data					2022/23
Subject (*)	Internet of Things (IoT)	Code	770G01055		
Study programme	Grao en Enxeñaría Electrónica Industrial e Automática				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Fourth	Optional	4.5	
Language	SpanishGalician				
Teaching method	Face-to-face				
Prerequisites					
Department	Enxeñaría Industrial				
Coordinador	Rivas Rodriguez, Juan Manuel	E-mail	m.rivas@udc.es		
Lecturers	Rivas Rodriguez, Juan Manuel	E-mail	m.rivas@udc.es		
Web					
General description	<p>This subject allows the student to be able to:</p> <ul style="list-style-type: none"> <li>-Understand the basic concepts of the IoT</li> <li>-Know the fundamentals of communication technologies defined for IoT</li> <li>-To acquire knowledge about some IoT development tools, software platforms and hardware</li> </ul>				

## Study programme competences / results

Code	Study programme competences / results
A3	Capacidade para realizar medicións, cálculos, valoracións, taxacións, peritaxes, estudos e informes.
A33	Coñecemento aplicado de informática industrial e comunicacións.
B5	Capacidade para empregar as técnicas, habilidades e ferramentas da enxeñaría necesarias para a práctica desta.
B6	Capacidade de usar adecuadamente os recursos de información e aplicar as tecnoloxías da información e as comunicacións na enxeñaría.
B8	CB1 - Que los estudiantes hayan demostrado poseer y comprender conocimientos en un área de estudio que parte de la base de la educación secundaria general, y se suele encontrar a un nivel que, si bien se apoya en libros de texto avanzados, incluye también algunos aspectos que implican conocimientos procedentes de la vanguardia de su campo de estudio.
C2	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.

## Learning outcomes

Learning outcomes	Study programme competences / results		
-Understand the basic concepts of the IoT	A3	B6	
-Know the fundamentals of communication technologies defined for IoT	A33		C2
-To acquire knowledge about some IoT development tools, software platforms and hardware.	A33	B5 B8	C2

## Contents

Topic	Sub-topic
Introduction to IoT	- Basic concepts.
IoT communication technologies	<ul style="list-style-type: none"> <li>- LPWANs</li> <li>- Based on cellular technology.</li> <li>- WiFi, Bluetooth.</li> <li>- Others.</li> </ul>



Software platforms for IoT	- Open source. - Commercial software.
Systems-on-a-chip for IoT	- Manufacturers. - Characteristics.

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A33 B5	15	0	15
Laboratory practice	A3 B5 B6 B8 C2	16.5	0	16.5
Supervised projects	A3 A33 B5 B6 C2	0	74	74
Objective test	B8	3.5	3.5	7
Personalized attention		0	0	0

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

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	Oral exposition complemented with the use of audiovisual media and the execution of questions directed to the students, with the purpose of transmitting knowledge, facilitating learning and promoting debate.
Laboratory practice	Methodology that allows students to learn effectively through practical activities, such as demonstrations, exercises, experiments and research.
Supervised projects	Part will be carried out in the classroom and part autonomously by the student.
Objective test	Duration 3.5 hours. It will be done individually and in person.

Personalized attention	
Methodologies	Description
Laboratory practice	It will be carried out in the laboratory practices and through the tutorials in the supervised projects.
Supervised projects	

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Laboratory practice	A3 B5 B6 B8 C2	Device programming that will be done in person. Students who have the necessary hardware can do them electronically.	30
Objective test	B8	Made individually.	40
Supervised projects	A3 A33 B5 B6 C2	Part will be carried out in the classroom and part autonomously by the student.	30

Assessment comments
<p>In laboratory practices and in the objective test must be obtained at least 40% of the maximum points in each part in order to pass the subject. Students who take part in the non-compulsory attendance and/or partial enrollment may agree with the teacher the possibility of doing alternative activities to the face-to-face ones.</p> <p>The criteria for passing the subject on the second opportunity are the same as for passing on the first.</p>



## Sources of information

<b>Basic</b>	- Pizarro Peláez, Jesus (2019). Internet de la cosas con Arduino. Madrid:Paraninfo - López i Seuba, Manel (2019). Internet de las cosas:la transformación digital de la sociedad. Paracuellos del Jarama:Ra-Ma
<b>Complementary</b>	

## Recommendations

### Subjects that it is recommended to have taken before

Computer Science/770G01002

Analog Electronics/770G01022

Digital Electronics/770G01023

### Subjects that are recommended to be taken simultaneously

### Subjects that continue the syllabus

### Other comments

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.