| Teaching Guide | | | | |
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| Identifying Data | | | | 2023/24 |
| 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 | This subject allows the student to be able to:<br>-Understand the basic concepts of the IoT<br>-Know the fundamentals of communication technologies defined for IoT<br>-To acquire knowledge about some IoT development tools, software platforms and hardware | | | |

| Study programme competences | |
|---|---|
| Code | Study programme competences |
| 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 | | |
| -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<br>B8 | C2 |

| Contents | |
|---|---|
| Topic | Sub-topic |
| Introduction to IoT | - Basic concepts. |
| IoT communication technologies | - LPWANs<br>- Based on cellular technology.<br>- WiFi, Bluethooth.<br>- Others. |
| Software platforms for IoT | - Open source.<br>- Commercial software. |

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| Systems-on-a-chip for IoT | - Manufacturers.<br>- Characteristics. |

| Planning | | | | |
|---|---|---|---|---|
| Methodologies / tests | Competencies | Ordinary class hours | 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<br>Supervised projects | It will be carried out in the laboratory practices and through the tutorials in the supervised projects. |

| Assessment | | | |
|---|---|---|---|
| Methodologies | Competencies | 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 |
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| In laboratory practices and in the objective test must be obtained al least 40% of the maximum poits in each part in order to pass the subject.<br>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.<br><br>The criteria<br>for passing the subject on the second opportunity are the same as for passing on<br>the first. |

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

| **Recommendations** |
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| **Subjects that it is recommended to have taken before** |
| Computer Science/770G01002<br>Analog Electronics/770G01022<br>Digital Electronics/770G01023 |
| **Subjects that are recommended to be taken simultaneously** |
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| **Subjects that continue the syllabus** |
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| **Other comments** |
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**(*)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.**