



Teaching Guide

| Teaching Guide | | | | |
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| Identifying Data | | | | 2020/21 |
| Subject (*) | Home Automation Systems (Domotics) | | Code | 770G02138 |
| Study programme | Grao en Enxeñaría Eléctrica | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Graduate | 2nd four-month period | Fourth | Optional | 4.5 |
| Language | Spanish | | | |
| Teaching method | Face-to-face | | | |
| Prerequisites | | | | |
| Department | Enxeñaría Industrial | | | |
| Coordinador | Casteleiro Roca, José Luis | E-mail | jose.luis.casteleiro@udc.es | |
| Lecturers | Casteleiro Roca, José Luis | E-mail | jose.luis.casteleiro@udc.es | |
| Web | | | | |
| General description | The subject's main objective is to give students theoretical knowledge, and operation ways, of various types of Home Automation Systems, in order to achieve the necessary knowledge for their manage, analysis and design. | | | |
| Contingency plan | <p>1. Modifications to the contents:</p> <ul style="list-style-type: none">- No changes will be made. <p>2. Methodologies:</p> <p>*Teaching methodologies that are maintained:</p> <ul style="list-style-type: none">- Master session.- Problem solving (computes in the evaluation).- Tutoed works (computed in the evaluation). <p>*Teaching methodologies that are modified:</p> <ul style="list-style-type: none">- Mixed test (computes in the evaluation). It will be changed to exam through Teams / Moodle.- Field trip. It cannot be done. <p>3. Mechanisms for personalized attention to students:</p> <ul style="list-style-type: none">- The Outlook / Teams / Moodle tools will be used to solve the doubts of the students. <p>4. Modifications in the evaluation:</p> <ul style="list-style-type: none">- No changes will be made in the weighting, only in the realization of the mixed test online through Teams / Moodle. <p>5. Modifications to the bibliography or webgraphy:</p> <ul style="list-style-type: none">- No changes will be made. | | | |

Study programme competences

| Code | Study programme competences |
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| A4 | Capacidade de xestión da información, manexo e aplicación das especificacións técnicas e da lexislación necesarias no exercicio da profesión. |
| A5 | Capacidade para analizar e valorar o impacto social e medioambiental das solucións técnicas actuando con ética, responsabilidade profesional e compromiso social, e buscando sempre a calidade e mellora continua. |
| B1 | Capacidade de resolver problemas con iniciativa, toma de decisións, creatividade e razoamento crítico. |
| B4 | Capacidade de traballar e aprender de forma autónoma e con iniciativa. |
| B5 | Capacidade para empregar as técnicas, habilidades e ferramentas da enxeñaría necesarias para a práctica desta. |
| B10 | CB3 - Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética. |



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| B11 | CB4 - Que los estudiantes puedan transmitir información, ideas, problemas y soluciones a un público tanto especializado como no especializado. |
| C3 | 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 | |
| Know the different facilities in a home and / or building | | A4 | B1 B4 C3 |
| Knowing home automation systems and their application to housing and building installations | | A5 | B5 B11 C3 |
| Know the energy certification of housing | | A4 | B10 C3 |

| Contents | |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topic | Sub-topic |
| The contents described in the verification memory are developed below according to the distribution shown | <p>Introduction to home automation systems and their applications. (Topic 1)</p> <p>Main domotic systems. (Topic 2, 3, 4 and 5)</p> <p>Installations in a house, and its integration with a home automation system. (Topic 6 and 7)</p> <p>Energetic certification. (Topic 8)</p> |
| Topic 1: Introduction to Home Automation | <p>1.1. General characteristics</p> <p>1.2. Features and applications of the Home Automation in housing</p> <p>1.3. Components of a Home Automation system</p> |
| Topic 2: Applications and types of automation systems | <p>2.1. Services and Home Automation applications at homes</p> <p>2.2. Classification of Home Automation systems</p> <p>2.3. Wireless systems</p> |
| Topic 3: Power Line Carrier systems | <p>3.1. The X-10 standard</p> <p>3.2. Main components</p> <p>3.3. Installation and configuration</p> <p>3.4. Other possibilities</p> |
| Topic 4: Systems with Programmable Logic Controller | <p>4.1. Characteristics of systems with Programmable Logic Controller</p> <p>4.2. SIMON system</p> <p>4.3. Basic components</p> <p>4.4. Installation and configuration</p> <p>4.5. Other systems with programmable controller</p> |



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| Topic 5: Data Bus systems | 5.1. KNX standard features 5.2. Basic components 5.3. Installation and configuration 5.4. Programming with ETS |
| Topic 6: Installations | 6.1. Electrical installations 6.2. Telecommunication installations 6.3. Plumbing installations 6.4. Air conditioning installations 6.5. LPG installations |
| Topic 7: Installations basic legislation | 7.1. The planning act in construction law 7.2. The technical building code 7.3. Electrical low voltage regulation 7.4. Thermal installations regulation 7.5. Common telecommunications infrastructure regulation |
| Topic 8: Energy management and certification | 8.1. Legislation 8.2. Home Automation involvement in the energy rating 8.3. Residential buildings certification 8.4. Tertiary sector buildings certification |

| Planning | | | | |
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| Methodologies / tests | Competencies | Ordinary class hours | Student?s personal work hours | Total hours |
| Guest lecture / keynote speech | A5 B4 C3 | 12 | 35 | 47 |
| Problem solving | A4 C3 | 7.5 | 20 | 27.5 |
| Laboratory practice | A4 B10 C3 | 6 | 9 | 15 |
| Workshop | A5 B5 B11 | 3 | 15 | 18 |
| Mixed objective/subjective test | B1 B4 B5 | 2 | 0 | 2 |
| Personalized attention | | 3 | 0 | 3 |
| (*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students. | | | | |

| Methodologies | |
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| Methodologies | Description |
| Guest lecture / keynote speech | <p>Keynote speech complemented with the use of audiovisual media and the introduction of some questions to students, in order to transmit knowledge and facilitate learning.</p> <p>The order of the topics covered will not have to be the one described in the teaching guide. In addition, there will be topics that can be seen together on the development of others, and the division between them may not be strict.</p> |



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| Problem solving | Solving exercises and specific problems in the classroom, from the knowledge explained. |
| Laboratory practice | Performing laboratory practice as far as possible; or, failing that, solving exercises and specific problems in the classroom, from the knowledge explained. |
| Workshop | An individual work was carried out, along with the correction of the work of other colleagues. In addition, this work will have to be presented in class. |
| Mixed objective/subjective test | It consists in carrying out an objective test of approximately 2 hours, in which the acquired knowledge will be evaluated. |

Personalized attention

| Methodologies | Description |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| Laboratory practice | The student has the relevant meetings of personalized tutorials, to resolve the concerns arising from the matter. |

Assessment

| Methodologies | Competencies | Description | Qualification |
|---------------------------------|--------------|-------------------------------------------------------------------------------------------|---------------|
| Workshop | A5 B5 B11 | Realization of a personal work, together with the evaluation of other work of colleagues. | 30 |
| Mixed objective/subjective test | B1 B4 B5 | Exam type objective test | 45 |
| Laboratory practice | A4 B10 C3 | Some tasks established in the subject, within the framework of this methodology | 25 |
| Others | | | |

Assessment comments

As part of the "Laboratory practice" may include aspects such as attendance, attitude, etc., to help obtain the approved. In addition, it may also include in this methodology the assessment of the presentation in class of personal work.

The "Mixed Test" can be divided into a multiple choice part and a few questions.

It will be necessary to exceed 50% of the score in the multiple choice of the "Mixed Test" to pass.

Students with recognition of part-time dedication and academic waiver of attendance exemption, second establishes the "NORMA QUE REGULA O RÉXIME DE DEDICACIÓN AO ESTUDO DOS ESTUDANTES DE GRAO NA UDC (Arts. 2.3; 3.b e 4.5) (29/5/212)", will be evaluated in the same way, allowing one more week of margin in the assignments.

For the second opportunity, there will be no second deadline for assignments, and the evaluation will be done in a similar way to the first opportunity.

Sources of information

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|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic | <ul style="list-style-type: none"> - Junstrand, Stefan (2004). Domótica y hogar digital. Madrid : International Thomson Editores - Huidobro, José Manuel (2008). Domótica : edificios inteligentes. Segovia: Copyright - Moreno Gil, José (2000). Instalaciones automatizadas en viviendas y edificios. Madrid: Paraninfo |
| Complementary | <ul style="list-style-type: none"> - Romero Morales, Cristóbal (2010). Domótica e inmótica: viviendas y edificios inteligentes. Madrid: Ra-Ma - Tobajas García, Carlos (2011). Instalaciones domóticas. Barcelona: Cano Pina: CEYSA - Huidobro, José Manuel (2010). Manual de domótica. Madrid: Creaciones Copyright |

Recommendations

Subjects that it is recommended to have taken before

Electric Installations low voltage/770G02022

Automation/770G02028

Power Electronics/770G02029

Technical Office/770G02034

Industrial installations and comercial/770G02031



(*)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.