Teaching Guide				
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	1. Modifications to the contents: - No changes will be made. 2. Methodologies: *Teaching methodologies that are maintained: - Master session. - Problem solving (computes in the evaluation). - Tutored works (computed in the evaluation). *Teaching methodologies that are modified: - Mixed test (computes in the evaluation). It will be changed to exam through Teams / Moodle. - Field trip. It cannot be done. 3. Mechanisms for personalized attention to students: - The Outlook / Teams / Moodle tools will be used to solve the doubts of the students. 4. Modifications in the evaluation: - No changes will be made in the weighting, only in the realization of the mixed test online through Teams / Moodle. 5. Modifications to the bibliography or webgraphy: - No changes will be made.			

Study programme competences / results	
Code	Study programme competences / results
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.

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 / results		
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	Introduction to home automation systems and their applications. (Topic 1) Main domotic systems. (Topic 2, 3, 4 and 5) Installations in a house, and its integration with a home automation system. (Topic 6 and 7) Energetic certification. (Topic 8)
Topic 1: Introduction to Home Automation	1.1. General characteristics 1.2. Features and applications of the Home Automation in housing 1.3. Components of a Home Automation system
Topic 2: Applications and types of automation systems	2.1. Services and Home Automation applications at homes 2.2. Classification of Home Automation systems 2.3. Wireless systems
Topìc 3: Power Line Carrier systems	3.1. The X-10 standard 3.2. Main components 3.3. Installation and configuration 3.4. Other possibilities

Topic 4: Systems with Programmable Logic Controller	4.1. Characteristics of systems with Programmable Logic Controller 4.2. SIMON system 4.3. Basic components 4.4. Installation and configuration 4.5. Other systems with programmable controller
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				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	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	
Methodologies	**Description**
Guest lecture / keynote speech	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. 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.
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 / Results**	**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	
Basic	- Junestrand, 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	- 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
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Efficient management of electric power/770G02040 Industrial Instrumentation/770G02042
Other comments
To help achieve an immediate sustainable environment and meet the objective of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan": 1. The delivery of the documentary works that are made in this matter: 1.1. They will be requested in virtual format and / or computer support   1.2. They will be made through Moodle, in digital format without the need to print them

(*)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.