Teaching Guide				
Identifying Data				2018/19
Subject (*)	Home Automation Systems (Domotics)		Code	770G02038
Study programme	Grao en Enxeñaría Eléctrica			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Fourth	Optional	6
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 of various types of the Home Automation Systems, and its operation ways, in order to achieve the necessary knowledge for their manage, analysis and design.			

Study programme competences / results	
Code	Study programme competences / results
A1	Capacidade para a redacción, firma, desenvolvemento e dirección de proxectos no ámbito da enxeñaría industrial, e en concreto da especialidade de electricidade.
A2	Capacidade para planificar, presupostar, organizar, dirixir e controlar tarefas, persoas e recursos.
A3	Capacidade para realizar medicións, cálculos, valoracións, taxacións, peritaxes, estudos e informes.
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.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
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.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Design and calculate technical facilities management and integration of the various services and facilities that exist in buildings	A2 A4		C1
Knowing the different facilities that can present homes and buildings; its main features and its architecture	A3 A5		C3 C7
Knowing the pillars of the technical management of facilities in residential buildings (Home Automation) and buildings (Building Automation)	A1 A4		C1
Conocer los principios de las normas, reglamentos y legislación y autorizaciones administrativas de instalaciones a nivel nacional, regional y municipal	A1 A3		C7
Knowing the selection and resize efficiently the appropriate energy systems, communications, comfort, security and energy management	A2 A5		C3
Conocer las soluciones técnicas que ofrece el mercado en el área de la gestión de instalaciones técnicas	A3		C3 C7
Ser capaz de interpretar la información técnica y otras fuentes de información, en español y en Inglés	A3		C1

Contents	
Topic	Sub-topic
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	A4 A5 C7	17	31	48
Problem solving	A3 A4 C1 C3	15	22	37
Laboratory practice	A1 A2 A3 C1	8	24	32
Workshop	A1 A4 C3 C1	8	10	18
Mixed objective/subjective test	A3 A4 C7	2	10	12
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. In addition, within the laboratory practice can include a small work of specific subjects of the subject to ensure the correct understanding of the subject.
Workshop	Realization of an individual work of a specific subject of the subject and sharing in a group to share knowledge. Later the works will be joined in a common one that will be presented in class by groups.
Mixed objective/subjective test	It consists in carrying out an objective test of approximately 1 hour, 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
Mixed objective/subjective test	A3 A4 C7	Exam type objective test	60
Laboratory practice	A1 A2 A3 C1	Some tasks established in the subject, within the framework of this methodology	15
Workshop	A1 A4 C3 C1	Realization of an individual work of a specific subject of the subject and sharing in a group to share knowledge. Later the works will be joined in a common one that will be presented in class by groups.	25
Others			

Assessment comments
As part of the "Laboratory practice" may include aspects such as attendance, personal work, proposed personal work, attitude, etc., to help to pass the subject. The "Mixed test" will be divided into a theoretical and practical part. It is necessary to exceed 50% of the score in the theoretical part of the "Mixed test" to approve, as well as having made and approved the work proposed in the "Laboratory practice".

Sources of information	
Basic	- Moreno Gil, José (2000). Instalaciones automatizadas en viviendas y edificios. Madrid: Paraninfo - Huidobro, José Manuel (2008). Domótica : edificios inteligentes. Segovia: Copyright - Junestrand, Stefan (2004). Domótica y hogar digital. Madrid : International Thomson Editores
Complementary	- Romero Morales, Cristóbal (2010). Domótica e inmótica: viviendas y edificios inteligentes. Madrid: Ra-Ma - Huidobro, José Manuel (2010). Manual de domótica. Madrid: Creaciones Copyright - Tobajas García, Carlos (2011). Instalaciones domóticas. Barcelona: Cano Pina: CEYSA

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