ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

595030061 - Smart home

DEGREE PROGRAMME

59EC - Grado En Ingenieria Electronica De Comunicaciones

ACADEMIC YEAR & SEMESTER

2018/19 - Semester 1

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	595030061 - Smart home
No of credits	3 ECTS
Type	Optional
Academic year ot the programme	Third year
Semester of tuition	Semester 5
Tuition period	September-January
Tuition languages	English
Degree programme	59EC - Grado en ingenieria electronica de comunicaciones
Centre	59 - Escuela Tecnica Superior de Ingenieria y Sistemas de Telecomunicacion
Academic year	2018-19

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Maria Luisa Martin Ruiz		marialuisa.martinr@upm.es	Sin horario.
Ivan Pau De La Cruz (Subject coordinator)		ivan.pau@upm.es	- -

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Prior knowledge required to take the subject

3.1. Prerequisite (passed) subjects

- Redes y servicios de telecomunicacion

3.2. Other required learning outcomes

El plan de estudios Grado En Ingenieria Electronica De Comunicaciones no tiene definidos requisitos para esta asignatura.

4. Skills and learning outcomes *

4.1. Skills to be learned

CE B2 - Conocimientos básicos sobre el uso y programación de los ordenadores, sistemas operativos, bases de datos y programas informáticos con aplicación en ingeniería.

CG 02 - Capacidad de búsqueda y selección de información, de razonamiento crítico y de elaboración y defensa de argumentos dentro del área.

CG 03 - Capacidad para expresarse correctamente de forma oral y escrita y transmitir información mediante documentos y exposiciones en público.

CG 04 - Capacidad de abstracción, de análisis y de síntesis y de resolución de problemas.

CG 05 - Capacidad de trabajo en equipo y en entornos multidisciplinares.

CG 06 - Capacidad de adaptación, negociación, resolución de conflictos y de liderazgo.

CG 07 - Capacidad para el diseño, la gestión y la dirección de proyectos.

CG 08 - Capacidad de organización, planificación y de toma de decisiones.

CG 09 - Capacidad de analizar y valorar el impacto social y medioambiental de las soluciones técnicas.

CG 11 - Habilidades para la utilización de las Tecnologías de la Información y las Comunicaciones.

CG 12 - Habilidad para las relaciones interpersonales y el trabajo en un contexto nacional e internacional, con capacidad para expresarse de forma oral y escrita en lengua inglesa.

CG 13 - Habilidades de aprendizaje con un alto grado de autonomía.

CG 14 - Actitudes de ética y responsabilidad profesional, respeto a los Derechos Humanos y a la diversidad cultural.

4.2. Learning outcomes

RA893 - Understanding of the smart home concept and its implications

RA895 - Make the design of a complete solution in a residential environment

RA894 - Understanding of the role of the Human Factors in engineering

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

5. Brief description of the subject and syllabus

5.1. Brief description of the subject

The Smart Home is a specific application of ambient intelligence focused on the deployment of solutions for people in the home environment. The Smart Home is a current issue in the research and industry community because its growth potential and its criticality when introducing technology in such a sensitive area for people. Due to its criticality, Smart Home is a multidisciplinary area where solutions are based on the application of advanced technologies (ICTs, artificial intelligence, etc.), characterization models of human beings (cognitive engineering, activity theory, psychology, etc.) and novel techniques of design of products and services (gamification, social design, display systems, affective computing, etc.).

The course will be taught following a Problem-Based learning Methodology. Students will be part of a group that should solve a specific issue related to the digital home. The evaluation will be based on the work done individually and in the group to solve the problem posed.

5.2. Syllabus

1. Introduction to concepts of Digital and Smart Home
    1.1. Definitions of Domotics and Digital Home
    1.2. Person-machine interaction and services at the digital home
        1.2.1. Human Factors
    1.3. Smart home concept and Ambient Assisted Living
2. Technologies at the Digital Home
    2.1. Sensors and actuators
    2.2. Communication networks
    2.3. Data processing and information managament at the digital home
    2.4. Integral domotic solutions
3. Ambient Intelligence at the Digital Home
    3.1. Concept of Ambient Intelligence
    3.2. Emerging technologies to create smart environments at the Digital Home

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1				
2	**Introduction to concepts of Digital and Smart Home** Duration: 02:00 Lecture			
3			**Team meeting** Duration: 02:00 Additional activities	
4		**Visit to the Accessible Digital Home** Duration: 02:00 Lecture		
5			**Team meeting** Duration: 02:00 Additional activities	
6			**Team meeting** Duration: 02:00 Additional activities	
7				**First report** Group work Continuous assessment Duration: 02:00
8			**Team meeting** Duration: 02:00 Additional activities	
9			**Team meeting** Duration: 02:00 Additional activities	
10			**Team meeting** Duration: 02:00 Additional activities	
11			**Team meeting** Duration: 02:00 Additional activities	
12			**Team meeting** Duration: 02:00 Additional activities	
13			**Team meeting** Duration: 02:00 Additional activities	
14			**Team meeting** Duration: 02:00 Additional activities	

15				**Students' Presentation** Group presentation Continuous assessment Duration: 02:00
16			**Students' Presentation (evaluation)** Duration: 02:00 Additional activities	
17				**Final Exam** Written test Continuous assessment Duration: 02:00 **Final Exam** Other assessment Final examination Duration: 02:00

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The subject schedule is based on a previous theorical planning of the subject plan and might go to through experience some unexpected changes along throughout the academic year.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
7	First report	Group work	Face-to-face	02:00	20%	/ 10	
15	Students' Presentation	Group presentation	Face-to-face	02:00	60%	/ 10	CG 04 CG 08 CG 12 CG 13 CG 14 CG 03 CG 05 CG 09 CG 02 CE B2
17	Final Exam	Written test	Face-to-face	02:00	20%	/ 10	CE B2 CG 04

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final Exam	Other assessment	No Presential	02:00	100%	/ 10	CE B2 CG 04 CG 02 CG 08 CG 12 CG 13 CG 14 CG 03 CG 05 CG 09

7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

7.2. Assessment criteria

Evaluation criteria are focused on achievement of competencies, skills and completion of learning results. Work presentations will be focused on the design and specification of a service and system to be deployed at a Smart Home.

Students who choose to be evaluated by final exam will have to make the same final exam that the rest of the students with two additional exercises:

- An exercise with a detailed explanation of a technology that will be published two weeks before the date of the final exam. This exercise will be performed during the final exam session.

- An exercise based on the writing of a project proposal related to the development of a Smart Home application. The project should include the same structure than the projects requested in continuous evaluation (but scaled to one person) and will be focused on specific technologies covered during the course.The topic of the project will be published two weeks before the final exam date. The document with the project proposal should be delivered by the final exam date.

For the call in July the grades of the works done by students will be saved. The exam will be similar to the final exam of the call for January for both continuous or final evaluation.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
SmartHouse Project	Bibliography	AENOR. "Código de prácticas del proyecto SmartHouse. UNE-CWA 50487 IN". AENORediciones, 2009. ISBN: 978-84-8143-639-6

ETSI EG 202 487 Guidelines	Bibliography	European Telecommunications Standards Institute (ETSI). ?Human Factors. User Experience Guidelines. Telecare Services (eHealth)?. ETSI EG 202 487. V.1.1.2., 2008.
Spanish ICT Regulation	Bibliography	Ministerio de Industria, Turismo y Comercio. ?Reglamento regulador de las infraestructuras comunes de telecomunicaciones para el acceso a los servicios de telecomunicación en el interior de las edificaciones?. BOE núm, 78 1/4/2011, pp. 33811
Home telecare book	Bibliography	Valero MA, Sánchez JA y Bermejo AB. ?Servicios y tecnologías de teleasistencia: tendencias y restos en el hogar digital?. Dirección Gral. de Universidades e Investigación. Comunidad de Madrid, 2007
AmI Book	Bibliography	Nakashima H, Aghajan H y Augusto JC, ?Handbook of Ambient Intelligence and Smart Environments?. Ed. Springer, 2010.
Hogar digital para la provisión de servicios sociosanitarios	Others	Curso de MiriadaX desarrollado por los docentes. https://miriadax.net/web/el-hogar-digital-para-la-provision-de-servicios-sociosanitarios

9. Other information

9.1. Other information about the subject

Both English and Spanish will be used for the teaching of the contents of the subject.