ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

103001024 - E-health: Promoting Active And Healthy Ageing

DEGREE PROGRAMME

10AK - Master Universitario En Software Y Sistemas

ACADEMIC YEAR & SEMESTER

2024/25 - Semester 1

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Learning guide

1. Description

1.1. Subject details

Name of the subject	103001024 - E-Health: Promoting Active And Healthy Ageing
No of credits	4 ECTS
Type	Optional
Academic year ot the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	10AK - Master Universitario en Software y Sistemas
Centre	10 - Escuela Tecnica Superior De Ingenieros Informaticos
Academic year	2024-25

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Cristian Moral Martos	5110	cristian.moral@upm.es	W - 10:00 - 14:00 F - 10:00 - 12:00 Please, ask for an appointment
Elena Villalba Mora (Subject coordinator)	5110	elena.villalba@upm.es	M - 10:00 - 12:00 W - 10:00 - 12:00 F - 10:00 - 12:00 Please, ask for an appointment

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

member in charge.

3. Prior knowledge recommended to take the subject

3.1. Recommended (passed) subjects

The subject - recommended (passed), are not defined.

3.2. Other recommended learning outcomes

- User Centred Design. User Experience basic knowledge.

4. Skills and learning outcomes *

4.1. Skills to be learned

CEM1 - Identificar, a partir del estado de la cuestión, la presencia de problemas de investigación relacionados con la concepción, la construcción, el uso y la evaluación de sistemas sociotécnicos complejos que hagan un uso intensivo de software

CEM9 - Evaluar las tecnologías más innovadoras para la interacción persona-ordenador y juzgar de manera crítica las aportaciones a los problemas de investigación relacionados

CG2 - Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios.

CG9 - Aplicación de los métodos de resolución de problemas más recientes o innovadores y que puedan implicar el uso de otras disciplinas

4.2. Learning outcomes

RA118 - Apply techniques for modelling the context of use

RA120 - Understand how user-centred design methods are used in non-academic environments

RA121 - Apply techniques for designing and implementing prototypes of different fidelity levels

RA119 - Evaluate the usability of prototypes

* 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 main focus of this subject is achieving an understanding of the necessary models, techniques and architectures that allow the development of interactive systems in the E-health domain. Topics to be covered include eHealth, eInclusion, co-production of health, empowerment, social innovation, social networks, serious games, and participation in society.

Along the course, alumni learn the techniques to achieve the competences through a project.

5.2. Syllabus

1. Active and Health Ageing

    1.1. Course introduction

    1.2. Definition and frameworks

2. Clinical perspective. Intrinsic capacity and frailty

3. Political perspective

4. Technological perspective

5. Social and personal perspective

6. Active and Healthy Ageing Project

6. Schedule

6.1. Subject schedule*

Week	Type 1 activities	Type 2 activities	Distant / On-line	Assessment activities
1	**1. Active and Healthy Ageing: 1.1 Course introduction 1.2. Definitions and frameworks** Duration: 02:00 Lecture			
2	**2. Clinical perspective.** Duration: 02:00 Lecture			
3	**6. Introduction to AHA project. 6.1 Topic choice** Duration: 02:00 Cooperative activities			
4	**3. Political perspective.** Duration: 02:00 Lecture			
5	**5.Technological perspective I** Duration: 02:00 Lecture			**Assignment of political and technological perspective** Individual work Progressive assessment and Global Examination Not Presential Duration: 06:00
6	**6. AHA Project. 6.1. Topic choice and planning of context of use observation** Duration: 02:00 Additional activities			
7	**4. Social and personal perspective** Duration: 02:00 Lecture			**Assessment. AHA Project: Planification of the observation of the context of use [non-recoverable]** Group work Progressive assessment Presential Duration: 02:00
8	**5. Technological perspective II** Duration: 02:00 Lecture			
9	**6. AHA project. 6.2 Observation, analysis and specification of context of use** Duration: 02:00 Laboratory assignments			
10	**6. AHA Project. Presentation of the Context of Use** Duration: 02:00 Additional activities			**Assessment. AHA Project: Context of use [non-recoverable]** Group presentation Progressive assessment Presential Duration: 08:00

11	**6. AHA Project. 6.3 Design and implementation of a prototype** Duration: 02:00 Laboratory assignments			
12	**6. AHA Project. 6.3 Design of a prototype** Duration: 02:00 Design thinking			
13	**6. AHA Project. 6.3. Creation of a prototype** Duration: 02:00 Laboratory assignments			**Assessment. AHA Project: prototype [non-recoverable]** Group work Progressive assessment Not Presential Duration: 03:00
14	**6. AHA project. 6.4 Evaluation of the prototype. Expert evaluation of heuristics** Duration: 02:00 Additional activities			
15	**6. AHA project. 6.5. Role Playing & Tutoring** Duration: 02:00 Laboratory assignments			
16	**6. AHA Project. 6.5 Analysis of results and reporting.** Duration: 02:00 Additional activities			
17				**Final Exam: Assessment: AHA project. Results. [non-recoverable]** Group presentation Progressive assessment Presential Duration: 03:00

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.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
5	Assignment of political and technological perspective	Individual work	No Presential	06:00	30%	5 / 10	CG2
7	Assessment. AHA Project: Planification of the observation of the context of use [non-recoverable]	Group work	Face-to-face	02:00	10%	/ 10	CEM1 CG9
10	Assessment. AHA Project: Context of use [non-recoverable]	Group presentation	Face-to-face	08:00	20%	/ 10	CG9 CEM1 CG2
13	Assessment. AHA Project: prototype [non-recoverable]	Group work	No Presential	03:00	20%	/ 10	CG9 CEM1
17	Final Exam: Assessment: AHA project. Results. [non-recoverable]	Group presentation	Face-to-face	03:00	20%	/ 10	CG2 CEM1 CEM9 CG9

7.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
5	Assignment of political and technological perspective	Individual work	No Presential	06:00	30%	5 / 10	CG2

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Final written exam	Written test	Face-to-face	03:00	100%	5 / 10	CG2 CEM1 CEM9 CG9

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7.2. Assessment criteria

Grading criteria

The projects will be evaluated during their iterative development during the course. Grading of students will be based on:

- Quality of the oral presentations (content, communication, slides)
- Quality of the intermediate and final results
- Ability to debate
- Active participation in class

Progressive evaluation system

The evaluation of this course is based on a progressive evaluation system (continuous evaluation), which grades the active participation of the student during the iterative development of an interactive project carried out in groups, following the human-centred design process. The project accounts for 70% of the final grade.

Besides, there is an individual assignment that accounts for the 30% of the final grade, that can be re-submitted in case a student fails it.

The evaluation activities and their concrete weight in the grading are described in "Continuous evaluation" ("Evaluación continua") above.

Global evaluation process

This course is based on the iterative development of an interactive system. Thus, the evaluation is a progressive one during the semester. Students unable to attend the classes can still submit the assignments in Moodle and will be evaluated at the same time as other students.

Given the iterative and incremental approach of the course, it is not possible to re-submit assignments related to the project at the end of the semester, but there are not minimal grades per those assignment.

The political and technological individual assignment can be re-submitted if a student fails, accounting for 30% of the final grade.

Extraordinary evaluation

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The extraordinary evaluation exists for students unable to pass the course during the semester. For that extraordinary evaluation students either must finish a concrete milestone they haven't passed (normally the last iteration; high-fidelity prototype and its evaluation, or the individual assignment), or a final exam that replace 100% of the grade.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Operational definition of Active and Healthy Ageing (AHA): A conceptual framework	Bibliography	Paper: Bousquet, Jean, et al. "Operational definition of Active and Healthy Ageing (AHA): A conceptual framework." The journal of nutrition, health & aging 19.9 (2015): 955-960.
Political context	Bibliography	Beard et al. (2016). The World Report on ageing and health: a policy framework for healthy ageing. Lancet 2016; 387: 2145-54
Age Friendly Cities	Bibliography	OMS. Global age-friendly cities: a guide (2017). Disponible en: http://www.who.int/ageing/publications/age_friendly_cities_guide/en/
mHealth	Bibliography	Mapping mHealth research: a decade of evolution. Fiordelli, Maddalena, Nicola Diviani, and Peter J. Schulz. Journal of medical Internet research 15.5 (2013).

mHealth review	Bibliography	From Personal to Mobile Healthcare: Challenges and Opportunities Villalba-Mora, Elena, Ignacio Peinado, and Leocadio Rodriguez-Mañas. (2016). Emerging Perspectives on the Mobile Content Evolution. IGI Global, 2016. 124-137.
Inspection Methods	Bibliography	Usability Inspection Methods. Edited by Jakob Nielsen and Robert L. Mack, published by John Wiley & Sons, New York, NY ISBN 0-471-01877-5. 1994
Design Guidelines of Mobile Apps for Older Adults: Systematic Review and Thematic Analysis	Bibliography	Paper by Gomez-Hernandez, M., Ferre, X., Moral, C., & Villalba-Mora, E. (2023). JMIR mHealth and uHealth, 11, e43186.

9. Other information

9.1. Other information about the subject

The objective of this course is to learn methods and technique to design interactive systems that have an adequate degree of usability and accessibility for a concrete vulnerable group: older population. Taking this into account, and the UN recommendations on SDGs, this subject deals with competencies related to the following SDGs:

- Goal 4. Quality education - Ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all. To facilitate this objective, interactive systems designed for teaching, which are increasingly important in society, must meet usability and accessibility requirements discussed in the subject.
- Goal 8. Decent work and economic growth - Promote inclusive and sustainable economic growth, employment and decent work for all. Today many jobs depend on the use of interactive systems. These systems must meet usability and accessibility requirements to promote equal opportunities at work, not discriminating because of age. New solutions and challenges related to ageing will also create new opportunities.
- Goal 10. Reduced inequalities - To favor the inclusion of all people in society, interactive systems that are designed for all types of activities, including citizen participation, culture and leisure, must meet the usability

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and accessibility requirements covered in the subject. This is of crucial importance for the older population whose requirements are usually not considered when designing interactive systems. This way we can reduce ageism.

Several innovative teaching methodologies are implemented in the course to motivate and reinforce student learning (https://innovacioneducativa.upm.es/guias-pdi):

- Methodology 1: Project-oriented learning: the subject is articulated through a group project that is carried out in a group and in which a User-Centred Design and Inclusive Design approach.
- Methodology 2: Challenge-Based Learning: the whole subject is articulated around a challenge that is widely recognised as one of today's major challenges: the ageing of the population.
- Methodology 3: Research-Based Learning: within the framework of the project, students carry out a first phase of user research to be able to analyse and specify the context of use.
- Methodology 4: Design Thinking: the project follows a User Centred Design, Inclusive Design and Design thinking approach.

In addition, students carry out an essay focusing on the geographical region where they live or where they come from in order to investigate policies related to ageing and technologies in ageing.

Note 1: please, always ask for an appointment before visiting a professor.

Note 2: please note that concrete dates for the assignments will be informed at the beginning of the course.