

**Academic Year/course: 2021/22**

## **68959 - Advanced aspects of Human-Computer Interaction in the field of health and wellness**

### **Syllabus Information**

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**Academic Year:** 2021/22

**Subject:** 68959 - Advanced aspects of Human-Computer Interaction in the field of health and wellness

**Faculty / School:** 326 - Escuela Universitaria Politécnica de Teruel

**Degree:** 614 - Master's in Innovation and Entrepreneurship in Health and Wellbeing Technologies

**ECTS:** 3.0

**Year:** 1

**Semester:** Second semester

**Subject Type:** Optional

**Module:**

## **1. General information**

### **1.1. Aims of the course**

In this subject the student will learn specific knowledge focused on the design and evaluation of interfaces linked to the field of health and well-being and related to the subject of Human-Computer Interaction, including concepts for the maintenance of security / privacy of patient data and analysis of large volumes of data and gamification aspects necessary to encourage the use of the designed interactive systems.

The subject has an applied character. The student will learn the necessary concepts already mentioned and, above all, they will learn to apply them in the design of problems.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDG, of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>) and certain specific goals, in such a way that the acquisition of the Learning outcomes of the subject provides training and competence to the student to contribute to a certain extent to their achievement:

? Goal 3: Ensure healthy lives and promote well-being for all at all ages.

Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

Target 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

? Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

? Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Target 8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training.

? Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Target 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

### **1.2. Context and importance of this course in the degree**

The course covers one of the basic pillars in the study of information technologies within the design of interactive systems applied to the fields of health and well-being.

The subject is optional within the Optional Training Subject of interactive systems and advanced signal processing.

### **1.3. Recommendations to take this course**

The student who takes this subject will take advantage of their basic knowledge of information technology. Previous training in the design of interactive systems or having completed training supplements in information and communication technologies will be appropriate.

## 2. Learning goals

### 2.1. Competences

Upon passing the subject, the student will be more competent to:

Basic Competence 6 (CB6): Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.

Basic Competence 7 (CB7): Students will know how to apply the acquired knowledge and the problem-solving capacity in new environments within broader (or multidisciplinary) contexts related to the area of ??study.

Basic Competence 9 (CB9): Students will know how to communicate their conclusions to specialized and non-specialized audiences in a clear and unambiguous way.

General Competence 1 (CG1): Possess the knowledge, aptitudes and skills necessary to carry out innovative work in the field of health and wellness technologies.

General Competence 2 (CG2): Know how to write documents or technical reports that describe a novel application in the field of technology for health and well-being, as well as know mechanisms to protect or distribute it.

General Competence 3 (CG3): Search, manage, understand and critically analyze scientific publications, bibliography and documentation in the field of Health and Wellness Technologies.

Specific Competence 9 (CE9): Carry out a technological modeling of a real element or scenario in the field of Health and Well-being Technologies, being able to connect it with models from other disciplines.

### 2.2. Learning goals

The student, to pass this subject, must demonstrate the following results:

1. Is capable of designing and evaluating person-computer interfaces that guarantee the accessibility and usability of systems, services and applications in the field of health and well-being for different interaction paradigms
2. Knows the security/privacy needs of patient data and knows how to apply the necessary measures to ensure usability in the interaction and protection of data.
3. Knows the need to analyze large volumes of data and applies the necessary techniques to analyze and adapt the results obtained to usable and accessible interfaces, generating data of interest to the groups treated.
4. Knows the gamification techniques and knows how to apply them in the design of applications in the field of health and well-being for different interaction paradigms.

### 2.3. Importance of learning goals

Interactive systems allow direct communication between the system and its users. It is of little use a system whose interface is unintelligible, too complex or inadequate for the interests of the user.

For this reason, this course aims to ensure that the student is able to design interfaces that have efficacy (accuracy and degree of achievement of the desired objectives), efficiency (relationship between the resources used and the results obtained) and satisfaction (absence of discomfort and existence of positive attitudes towards the use of the product) of the user within the scope of health and well-being, taking into account aspects of security and privacy, handling of large volumes of data and gamification techniques.

## 3. Assessment (1st and 2nd call)

### 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that they have achieved the expected learning outcomes through the following assessment activities:

Practical work: 70%

Assessment of theoretical and practical knowledge: 30%

The theoretical-practical knowledge test will cover the general knowledge of the subject exposed in the theoretical classes and, where appropriate, external sources used in the classes (book chapters, web files or others) and / or the knowledge obtained from the application of theoretical knowledge in practical work

Weight for the global note: 30%.

The evaluation of the practical work will be held on the same date and at the time and place, to be announced in the corresponding official call and will consist of the delivery of all the materials produced as a result of the practical classes of the course.

Weight for overall grade: 70%.

## 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The learning process that has been designed for this subject is based on the following:

- The study and work continued from the first day of class.
- The learning of concepts and methodologies for the analysis and design of interfaces through theoretical and practical work, which will promote the participation of students and virtual work on the web.
- Teamwork in order to develop an interface project for a proposed application by the teachers, the result of which is reflected in the delivery of the results appropriately designed and documented and which will serve for the evaluation in the terms indicated in the corresponding section.

#### 4.2. Learning tasks

The program offered to the student to help them achieve the expected results includes the following activities:

- Recorded classes available on the virtual platform and/or synchronous meetings for content presentation.
- Practical sessions using telematic mean

The estimated dedication will be as follows:

Theoretical / practical classes: 20 hours

Study and realization of works: 55 hours

#### 4.3. Syllabus

The course will address the following topics:

Human-Computer Interaction (IPO) in the field of health and well-being

Emerging paradigms in interaction and possible applications.

User-Center Life Cycle in the desing of health & well-being applications

Advanced evaluation techniques.

Requirements in the security, privacy and treatment of patient data.

Access to large patient data warehouses and adapted visualization.

Use of gamification in the field of health and well-being

Development of integrative monitoring applications and other practical cases.

#### 4.4. Course planning and calendar

It will be adjusted to the general calendar established by the University of Zaragoza and the center. Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the "Escuela Universitaria Politécnica de Teruel" <https://eupt.unizar.es/>

#### 4.5. Bibliography and recommended resources

The bibliography recommended by the teaching staff will be available in the library of the University of Zaragoza <http://psfunizar10.unizar.es/br13/eBuscar.php?tipo=a>