69715 - e-Health systems

Syllabus Information

Academic year: 2023/24
Subject: 69715 - e-Health systems
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 633 - Master's Degree in Biomedical Engineering
ECTS: 3.0
Year: 1
Semester: Second semester
Subject type: Optional
Module:

1. General information

The general objective of this subject is for the student to learn about the main existing telemedicine and e-Health applications, systems and services, delving into different aspects of these: scenarios of use, design of architectures, technologies involved, implementation and evaluation, so that they will be able to design new services.

The subject should lead the student to know a range of telemedicine and e-health services and applications in different areas: telemonitoring systems, teleecography, telecardiology, teledermatology, teleencephalography, etc., deepening in the aspects of interoperability and standardization.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/en/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement: Goal 8: Decent work and economic growth (Objective8.2) and Goal 9: Industry, innovation and infrastructure (Objectives 9.c, 9.1 and 9.5).

2. Learning results

- To be able to identify and analyse the basic aspects of telemedicine and e-Health systems, including technical and legal requirements, etc.
- To be able to understand with critical perspective aspects of interoperability and standardization in the framework of e-Health.
- To be able to understand and apply technological tools related to architectures and service modelling,
- security, etc.
- To be able to apply the methodological bases of evaluation in telemedicine and e-Health services.
- To be able to propose telemedicine and e-Health services and applications in different areas, scenarios and use cases.

3. Syllabus

Introduction (4h)

Basic concepts

Requirements for systems and services, regulations, etc.

Examples of systems

Interoperability and standardization (14 h)

Fundamentals of eHealth Interoperability

Standards in electrocardiology (SCP-ECG)

Medical device standards (IEEE11073)

Medical imaging standards (DICOM)

Standards of clinical terminology (SNOMED-CT)

EHR standards (13606, openEHR)

Information Exchange Standards (HL7)

Integrating the Healthcare Enterprise (IHE)

Evaluation of eHealth services (6 h)

Methodological bases of evaluation, theories of alignment

Evaluation models

Successes and failures of e-Health systems and services: Telederma, Tele-EEG

mHealth (6h)

Mobile applications, mHealth challenges, mHealth market.

App design and evaluation

Social networks in mHealth

4. Academic activities

A01 Participative master class (22 hours): presentation by the teachers of the main contents of the subject. This activity will be carried out in the classroom. It is complemented with seminars by specialists involved in e-Health service experiences.

Problem solving and case studies (8 hours) The subject includes the approach, design and evaluation of e-Health project proposals.

Practical application or research work. The work consists of presenting a service proposal and/or application of telemedicine and e-health in different areas and scenarios, using the concepts and tools acquired in the subject. It also includes an oral presentation and discussion of the proposal.

Personalized attention to students through tutorials.

Assessment Set of theoretical-practical written tests and presentation of works used in the evaluation of the student's progress.

5. Assessment system

E1: Final exam (40%).

Written exam, with a grade from 0 to 10 points. The student must obtain a minimum total grade of 4 out of 10 points. There will be a global test in each of the calls established throughout the term, on the dates and times determined by the School. In case of not performing the evaluation activities E2 and E3 in the first call, in the following calls the percentage of E1 will be 100%.

E2: Tutored practical work (40%).

Graded from 0 to 10 points. In the evaluation of the tutored work proposed during the four-month period, the following will be taken into account:

The report presented, as well as the suitability and originality of the proposed solution.

E3: Presentation of practical work (20%).

The evaluation of the presentation of the tutored work will take into account both the presentation of the work and the ability to respond to the questions posed.

The student will have a global test in each one of the calls established throughout the academic year. The dates and

test schedules will be determined by the School.