Academic Year/course: 2021/22

69715 - e-Health systems

Syllabus Information

Academic Year: 2021/22
Subject: 69715 - Sistemas de e-Health
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 633 -
ECTS: 3.0
Year: 2 and 1
Semester: Second semester
Subject Type: Optional
Module:

1. General information

1.1. Aims of the course

The subject and its expected results respond to the following approaches and objectives:

The general objective of the subject e-Health Systems is that the student knows the main applications, existing telemedicine and e-Health systems and services, delving into different aspects of them: scenarios, architecture design, technologies involved, implementation and evaluation, so that it is capable of propose the design of new services.

The course must lead the student to know a range of telemedicine and e-Health services and applications in different areas: telemonitoring systems, teleechography, telecardiology, teledermatology, teleencephalography, etc.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDG) of the Agenda 2030 of the United Nations (https://www.un.org/sustainabledevelopment/es/), in such a way that the acquisition of learning outcomes of the subject provides training and competence to contribute to some extent to your achievement: Goal 8: Decent work and economic growth (Goal 8.2) and Goal 9: Industry, innovation and infrastructure (Goals 9.c, 9.1 and 9.5).

1.2. Context and importance of this course in the degree

The subject e-Health Systems is an elective subject of the master's degree in Telecommunications Engineering. The Learning results obtained in this subject may be used in Master's Final Projects of the line of research in telemedicine and e-Health. This subject is linked to the subject with code 69715 of the Master University in Biomedical Engineering.

Telemedicine tries to make the most of the use of Information and Communication Technologies (TIC) as a means of providing medical services at a distance, regardless of the location of those offering the service, the patients who receive it and the information exchanged. This concept has been expanded in recent years towards the new e-Health paradigm, understood as the set of ICT-based tools used in tasks of prevention, diagnosis, treatment, monitoring, as well as health and lifestyle management. This concept encompasses, for example: the interaction between patients and healthcare providers, the transmission of data between institutions, peer-to-peer communication between patients or health professionals, information networks electronic health records, telemedicine services, personal communication systems and portable for monitoring and assisting patients. Training in e-Health Systems within Engineering Telecommunications is very relevant considering the high interest of these areas of specialization at the level National and international.

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It promotes creativity and autonomous learning. A wide range of teaching and learning tasks are implemented, such as lectures, practical tasks, and specific research activities.

Students are expected to participate actively in the class throughout the semester.

4.2. Learning tasks

The course includes the following learning tasks:
- A01 Lectures (22 hours). The professor will explain the main contents of the course. They are complemented with seminars from specialists involved in experiences of e-Health services.
- A02 Case studies (6 hours). The course includes the approach, design and evaluation of e-Health project proposals.
- A05 Assignments. Students work on a proposal for the service and / or application of telemedicine and e-health in different settings and scenarios, using the concepts and tools learned in the course. It also includes the oral presentation and discussion of that proposal.
- A06 Tutorials. Students may ask any questions they might have about unclear contents of the course.
- A08 Assessment. A set of written tests and assignments.

4.3. Syllabus

The course will address the following topics:

Topic 1. Introduction
- Basic concepts.
- Requirements for systems and services, regulations, etc.
- Examples of systems.

Topic 2. Interoperability and standardization
- Fundamentals of eHealth interoperability
- Standards for electrocardiology (SCP-ECG)
- Standards for medical devices(IEEE11073)
- Standards for medical image (DICOM)
- Standards for clinical terminolgy (SNOMED-CT)
- Standards for EHR (13606, openEHR)
- Standards for medical information exchange (HL7)
- Integrating the Healthcare Enterprise (IHE)

Topic 3. e-Health services assessment
- Methodological basis for assessment, alignment theories.
- Models for assessment
- Successes and failures of eHealth systems and services: Telederma, Tele-EEG

Topic 4. m-Health
- Mobile apps, mHealth challenges and market
- apps design and assessment
- Social networks in mHealth

4.4. Course planning and calendar

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 EINA website.

4.5. Bibliography and recommended resources