

**Projects in IoT for eHealth**

Code: 44021  
ECTS Credits: 6

Degree	Type	Year	Semester
4316624 Internet of Things for e-Health	OB	0	1

**Contact**

Name: Jordi Carrabina Bordoll  
Email: Jordi.Carrabina@uab.cat

**Use of languages**

Principal working language: english (eng)

**Teachers**

Ferran Torres  
Remo Lucio Suppi Boldrito  
Maria Feijoo Cid  
David Téllez Velasco  
Juan Leyva Galera

**Prerequisites**

MOdules 1 & 2 of the Master

**Objectives and Contextualisation**

This module focuses on the design, development and management of ICT projects in health in the range of applications spanning the active health monitored by devices IoT master, wearable continued in real time until the use of decision support algorithms for medical technologies, in accordance with the standards and models of the health domain both international and local, including qualitative and quantitative aspects related to research and the multidisciplinary teams and in compliance with the ethical and legal aspects, specially those related with the users and patients.

**Skills**

- Apply basic research tools in the area of IoT in health.
- Apply the ethical rules applicable in the health sector.
- Apply the local, autonomic, national and international regulations in the area of IoT in health.
- Continue the learning process, to a large extent autonomously.
- Identify care procedures in the health system and the factors for their digital transformation to a more efficient model for professionals and patients.
- Plan, develop, evaluate and manage solution for projects in the different areas of IoT taking into account aspects of multidisciplinary co-design, user privacy and data security.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use ICT applied to IoT in health.

## Learning outcomes

1. Apply basic research tools in the area of IoT in health.
2. Apply the local, autonomic, national and international regulations in the area of IoT in health.
3. Continue the learning process, to a large extent autonomously.
4. Design subsystems or systems generating products that meet standards and regulations and be familiar with related procedures and their evaluation.
5. Identify the healthcare procedures within the health system in its distinct ambits and implement these totally or partially through IoT technologies in an efficient manner.
6. Select the most suitable components, technologies, platforms and data sets to develop solutions to health IoT problems.
7. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
8. Use ICT applied to IoT in health.

## Content

### 1. Global view of the Health system

- Health Care Systems: Spanish & Catalan Models
- Main environments: Primary care & Hospitals
- Process management

### 1. ICT Project Design/Management

- Projects and Services
- Goals, tasks and Milestones
- Work Packages
- Work Planning: Chronogram
- Resources & Costs
- Use Cases
- Application to TFM's

### 1. Project Design for Health

- Type of studies and scientific evidence
- Qualitative and quantitative methodology
- Quantitative research studies
- Qualitative research studies
- Reviews and Clinical practice guides

### 1. Implantation of ICT Projects

- Technology Selection
- Business models & provides
- Project tracking. Contingency plans
- Certification Procedures (device, SW, processes, etc.)
- Examples of ICT projects and technologies (Invited Companies/Entities)

## Methodology

The learning methodology will combine: classes exhibition activities in tutored session based learning problems and use cases participation in follow-up to prepare oral presentation/exhibition of works works Personal study.

Attendance will be mandatory for all face-to-face activities.

This course will employ UAB's virtual campus at <https://cv.uab.cat>.

## Activities

Title	Hours	ECTS	Learning outcomes
<b>Type: Directed</b>			
Lessons and Seminars	45	1.8	1, 2, 3, 4, 5, 8
<b>Type: Supervised</b>			
Use Case Exercises & TFM	14	0.56	1, 4, 5, 6, 7
<b>Type: Autonomous</b>			
Study, Homework, TFM Project Plan	90	3.6	2, 3, 4, 5, 6, 7, 8

## Evaluation

The final mark for the course, is calculated in the following way:

A - 10% from the mark obtained by the student for class attendance and active participation in class discussions.

B - 45% from the mark obtained by the student for a practical project developed through problem-based learning (TFM).

C - 45% from the mark obtained by the student for an oral defense

A final weighted average mark not lower than 50% is sufficient to pass the course, provided that a score over one third of the range is attained in everyone of the 3 mark.

Plagiarism will not be tolerated. All students involved in a plagiarism activity will be failed automatically. A final mark no higher than 30% will be assigned.

An student not having achieved a sufficient final weighted average mark, may opt to apply for remedial activities the subject under the following conditions:

- the student must have participated in the problem-based learning activities, and
- the student must have participated in the oral defense, and
- the student must have a final weighted average higher than 35%, and
- the student must not have failed any activity due to plagiarism.

Students not having participated in any evaluation activity will receive a final mark of "No evaluable".

## Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Attendance and active participation in class	5-20%	0	0	1, 2, 3, 5, 8
Evaluation of the Work/Project Report	20-60%	0	0	2, 4, 5, 6, 7, 8
Oral defense of the work(s)/project(s) carried out	20-60%	1	0.04	1, 2, 4, 6, 7, 8

## Bibliography

General Health

<http://www.who.int/>

<http://www.euro.who.int/en/about-us/partners/observatory/publications>

#### Project management

A Guide to the Project Management Body of Knowledge. Project Management Institute (PMI).

[http://dinus.ac.id/repository/docs/ajar/PMBOKGuide\\_5th\\_Ed.pdf](http://dinus.ac.id/repository/docs/ajar/PMBOKGuide_5th_Ed.pdf)

The Standard for Program Management-Third Edition. Project Management Institute (PMI).

Organizational Project Management Maturity Model (OPM3®)-Third Edition. Project Management Institute (PMI).

#### Clinical Trials

Pocock SJ. Clinical Trials - A Practical Approach. West Sussex, England: John Wiley & Sons, 1983.

Piantadosi S. Clinical Trials A Methodologic Perspective Second Edition. Hoboken, NJ: Wiley-Interscience, 2005.

#### Epidemiology

Strom BL. Pharmacoepidemiology. 3rd ed. Chichester: John Wiley, 2000.

#### Statistics

Armitage PG, Berry G, Matthews JNS. 2002. Statistical methods in medical research. Oxford: Blackwell Science Limited.

Altman DG, Machin D, Bryant TN, Gardner MJ. Statistics with confidence. London, UK: BMJ Publishing Group, 2000.

#### Scientific reporting

All designs: EQUATOR <http://www.equator-network.org/>

Clinical trials: Reporting Clinical Trials CONSORT Statement <http://www.consort-statement.org/>

Observational Studies: The Strengthening the Reporting of Observational Studies in Epidemiology, STROBE <http://www.strobe-statement.org/>

Basic Statistical Reporting for Articles Published in Biomedical Journals, SAMPL

<http://www.equator-network.org/wp-content/uploads/2013/07/SAMPL-Guidelines-6-27-13.pdf>

Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): The TRIPOD statement <http://www.tripod-statement.org>