

Assisted-Living Technologies

Code: 44024
ECTS Credits: 6

Degree	Type	Year	Semester
4316624 Internet of Things for e-Health	OT	0	2

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

Name: Enric Martí Godia
Email: Enric.Marti@uab.cat

Use of Languages

Principal working language: english (eng)

Teachers

Enric Martí Godia
David Castells Rufas
Marc Codina Barbera

Prerequisites

Compulsory modules M1-M5

Objectives and Contextualisation

This module focuses on the technologies monitoring, assistance and improvement of health and the physical condition of the people, whether patients in treatment care, face to face or not, or good people interested in learning about their health state in an autonomous and continued way. These technologies range from passive aspects (wearables) to the most active based on techniques of empowering and gamification. Use cases examples will be developed based on the design and implementation of apps for smart watches and smartphones with Android and of serious games with Unity and Unreal.

Competences

- Apply the local, autonomic, national and international regulations in the area of IoT in health.
- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- 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.

- Use and implement methods, techniques, specific use programmes, norms and standards in the development of mobile apps/wearables and social networks in the area of health.

Learning Outcomes

1. "Develop hardware and software solutions for remote monitoring through the user's own devices: smartwatches, smartphones and wearable apps; SmartHome and Serious Games platforms."
2. Apply the local, autonomic, national and international regulations in the area of IoT in health.
3. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
4. Continue the learning process, to a large extent autonomously.
5. Integrate monitoring technologies (wearables and smartphones) and the promotion of physical and mental activity (gamification and serious games) in healthcare procedures within the healthcare system.
6. Plan and develop applications on mobile platforms, smart-home wearables and serious games in the area of health.
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

- The interaction of the user with the health system
- Wearable and Implantable technologies
- Body and Personal Area Networks Support
- Apps for smartwatches and smartphones health tracking
- Telemedicine and Smart Home Platforms
- Advanced Athletes Monitoring
- Gamification
- Serious Games

Methodology

The learning methodology will combine: master classes, activities in tutored session. problem based-learning and use cases; debates and other collaborative activities and laboratory sessions.

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

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

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lessons and Seminars	40	1.6	1, 2, 5, 4, 8
Type: Supervised			
Laboratories & Exercises	13	0.52	1, 5, 6, 7, 3
Type: Autonomous			

Assessment

The lower range of synthesis examination has been considered 0% to allow that, in the case of a few students other assessments may be sufficient for a correct evaluation.

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 evaluation marks.

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 laboratory activities, and
- the student must have devibered some of the reports, and
- the student must have a final weighted average higher than 30%, 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".

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Activities & Reports from supervised sessions (labs)	20-40%	4	0.16	1, 5, 6, 3, 4
Attendance and active participation in directed & supervised sessions	5-20%	4	0.16	6, 3, 4, 8
Report(s) evaluation	20-40%	2	0.08	1, 2, 5, 6, 7, 3
Synthesis examination	0-30%	2	0.08	1, 5, 6, 3, 8

Bibliography

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Software

In this subject we will use the following software:

- Multimedia Codecs (VLC)
- Visual Studio C++ 2019 and OpenGL graphics library

All these software are with educational license.