

DEGREE IN INDUSTRIAL DESIGN ENGINEERING

TEACHING PLAN OF SUBJECT CONNECTED ECOSYSTEMS

ACADEMIC YEAR: 2026-27

YEAR: 3rd

CHARACTER: Optional

SEMESTER: 6th

ECTS: 6

TEACHING HOURS: 45

HOURS OF SELF-EMPLOYMENT: 105

TOTAL HOURS: 150

LANGUAGE/S: English

ID: 17061

TEACHING TEAM: Xavier Riudor xriudor@elisava.net / Carles Araguz caraguz@elisava.net

PRESENTATION SUBJECT / OBJECTIVES

The optional subject of Connected Ecosystems is framed within the mention of Product and Data Management. This subject has 3 main objectives: to establish the knowledge of electronics and Arduino, to provide the knowledge to the student for the sharing of data, and the necessary mechanisms to carry out the connectivity between devices.

The Product and Data Manager profile must be able to understand the communication processes and how data transmission is done; both between products and in product and service systems. Where information must flow efficiently in the system for its proper functioning.

The subject will provide students with the theoretical information necessary to understand different communication systems, as well as the tools and methodologies necessary to plan and build them.

SUSTAINABLE DEVELOPMENT GOALS (SDGS)

This subject does not specifically incorporate any SDG.

CONTENTS

Block-I: Communication Technologies.

- Wi-fi
- Bluetooth
- Radiofrequency

Block-II: Types of communication

- Unidirectional / Bidirectional
- Multicast / Broadcast

Block-III: Electronic components

- Shields
- Boards with communication
- Components

TEACHING METHODOLOGIES

- Work sessions with the whole class group with the teacher (PA)

COMPETENCES

- G3 - Integrate formal sensitivity as a fundamental part of the project process.
- CB4 - The student can transmit information, ideas, problems, and solutions to both specialized and non-specialized audiences
- T2 - Project the values of entrepreneurship and innovation in the exercise of the academic and professional personal trajectory through contact with different realities of practice and motivation towards professional development.
- T4 - Show skills for professional practice in multidisciplinary and complex environments, in coordination with networking teams, either in face-to-face or virtual environments, through the computer and informational use of ICT.
- T6 - Use different forms of communication, both oral and written or audiovisual, in one's language and foreign languages, with a high degree of correctness in use, form, and content.
- E3 - Use computer science and programming for its application in different phases of industrial design engineering.
- E6 - Use different methodologies and work tools to correctly design any product, system, or service.
- E11 - Identify emerging technologies that can add value to the project.

LEARNING OUTCOMES

- Apply data in different phases of industrial design engineering.
- Use the necessary tools for the completion of products, systems, and services.
- Communicate concepts through prototyping.
- Adds value to the project by identifying the right emerging technologies.

TRAINING ACTIVITIES

Each subject will present at the beginning of the course its WORK PLAN where the didactic activities per week/ session / autonomous work are recorded.

EVALUATION

EVALUATION SYSTEMS

The evaluation of the subject will be based on continuous monitoring of the student's academic work throughout the course.

EVALUATION SYSTEM	FINAL WEIGHTING
P2-Follow-up on the work done	40
P3-Reports from the students themselves, external tutors, court	10
P5-Realization of required works or projects	50

EVALUATION CRITERIA

The final grade of the subject will be the weighted average of the grades of the evaluable activities according to the following table

EVALUABLE ACTIVITY	WEIGHT	RECOVERABLE (up to 50%)	EVALUATION SYSTEM
Activity-1 Conducting exercises and participating in class	15%	NO	P-2
Activity-2 Progress reports	10%	NO	P-3
Activity-3 Weekly Presentations	25%	NO	P-2
Activity-4 Working Prototype	30%	YES*	P-5
Activity-5 Final Technical Report	20%	YES*	P-5

Students will have the option of re-examining themselves for recoverable tests. The recovery tests will be carried out in the period of the semester destined to this function, not being able to recover more than 50% of the subject.

* In the event that the Recoverable Evaluable Activities exceed 50%, the student may choose, up to a limit of 50%.

The unjustified non-presentation of any evaluable activity implies a grade of 0, even if the activity has been qualified as Recoverable.

The Recoverable Activities can only be subject to recovery when they have been delivered by the student on the indicated date and with a grade equal to or greater than 3.

If you renounce access to the recovery test, the grade achieved in the first instance will be maintained.

In case of presenting to recovery, the note obtained will be the last, even if it is less than the first.

Plagiarism or copying someone else's work is penalized in all universities and, according to the Rules of Coexistence of the University of Vic-Central University of Catalonia, they constitute serious or very serious offenses. That is why during the course of this subject any indication of plagiarism or misappropriation of other people's texts or ideas ([What is considered plagiarism?](#)) as well as the improper or undeclared use of Artificial Intelligence in an activity, will result automatically in failure of the subject and/or other disciplinary measures ([Norms of Coexistence of the University of Vic-Central University of Catalonia](#)).

For any questions or queries, see the ([Academic Regulations for the Degree of the Elisava Faculty of Design and Engineering UVic-UCC](#)).

BIBLIOGRAPHY AND TEACHING RESOURCES

- Hartman, K. 2014. *Make: Wearable Electronics: Design, prototype, and wear your own interactive garments*. Maker Media, Inc..
- Lajara, J. R., & Sebasti  , J. P. 2014. *Sistemas integrados con Arduino*. Alpha Editorial.
- Makarov, Sergei N., Ludwig, Reinhold y Bitar, Stephen J. 2016. *Practical electrical engineering*. 1^a edici  n. Switzerland: Springer.
- Scherz, Paul, y Monk, Simon. 2016. *Practical electronics for inventors*. 4a edici  n. New York: McGraw-Hill Education.

- Tipler, Paul Allen, y Mosca, Gene. 2010. *Física para la ciencia y la tecnología*. 6ª edición. Vol. 2. Barcelona: Reverté.

The teaching staff will provide a specific bibliography at the beginning of the subject, if applicable.