

30241 - Embedded Systems Laboratory

Syllabus Information

Academic year: 2023/24

Subject: 30241 - Embedded Systems Laboratory

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 439 - Bachelor's Degree in Informatics Engineering

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type:

Module:

1. General information

The subject allows the students to apply in an integrated manner the basic knowledge and skills acquired in the previous subjects (Embedded Systems I and Embedded Systems II). This subject completes the topic of Embedded Systems through practical training.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>) and certain specific targets:

Goal 9: Industry, Innovation and Infrastructure.

- Target 9.5. Increase scientific research and improve the technological capacity of industrial sectors in all countries.
- Target 9.c. Significantly increase access to information and communications technology.

2. Learning results

The student body upon passing the subject:

Have a broad vision of the most widely used operating systems in embedded and real-time systems, and know how to port to a platform and use the services of at least one of them.

Know and knows how to handle development environments for embedded and real-time systems.

Know how to design and build embedded and real-time systems based on microprocessors or other platforms, of low complexity, taking into account security, reliability, fault tolerance and power consumption criteria.

Know how to analyze and select hardware/software platforms suitable for embedded and real-time applications.

3. Syllabus

In the initial sessions the student will use advanced hardware/software platforms learning to design a custom system-on-chip.

Then several subject projects are defined with topics such as accelerator design, internet of things, embedded systems with real time constraints, performance and consumption analysis...

4. Academic activities

Lectures (15 hours): in these classes there will be an introduction to the subject, introducing the necessary theoretical knowledge, relating it to the knowledge acquired in previous subjects, describing the material used in previous subjects, describing the support material available, and briefly explaining the tasks to be performed.

Practical sessions (45 hours, 3 hours per week during the whole term), supervised by one of the teachers of the subject.

Personal study and work (70 hours estimated): students work on their own, using the available material to acquire the necessary skills and complete the required projects.

Writing the documentation and preparing the presentation (15 hours): once a project has been completed and the teacher has approved the work done, the students must present a report and make a public presentation of the work performed.

Submissions and corrections (5 hours): students must periodically submit the work done to one of the teachers of the subject. These deliverables serve both to evaluate the student and to guide the student.

5. Assessment system

There are two alternative paths for the assessment of this subject:

Continuous assessment: students will be required to make a series of deliveries or demonstrations of progress within deadlines that will be established well in advance. In addition, they will have to defend their work orally and submit a report. In order to pass the subject, all submissions must be satisfactorily completed.

Assessment by means of a global exam (only in the second call): the exam will be a practical exam related to one of the projects developed in the subject.