

## 30266 - Distributed Information Systems

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 30266 - Distributed Information Systems

**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

This subject focuses on the study of distributed data management techniques and their application to different environments, such as Web, Big Data or mobile computing scenarios, all of which are very important in today's job market. This subject expands the knowledge acquired in previous subjects of Databases and Information Systems, focusing on contexts where data must be managed in a distributed way. Therefore, it is recommended to have taken the subjects "Databases" and "Information Systems".

With the development of the subject, the following objectives are intended to be achieved:

- Understand and know how to analyze the necessary requirements for the design of information systems that process distributed information in different nodes.
- Understand and know how to analyze and describe the particularities and difficulties that various distributed environments pose from a data management point of view.
- Know and know how to compare different existing techniques for distributed data management.

These approaches and goals are aligned with some of the Sustainable Development Goals, SDGs, of the Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>) and certain specific goals, so that the acquisition of the learning results of the subject provides training and competence to the student to contribute to some extent to their achievement:

- Goal 1: End poverty in all its forms throughout the world. Target 1.4.
- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Target 8.2.
- Goal 16: Promote just, peaceful and inclusive societies. Target 16.5.

### 2. Learning results

- Know the importance of the Web in organizations, its advantages and risks, as well as the associated technology.
- Be able to propose and design appropriate solutions to solve data management problems in distributed environments.
- Be able to apply different existing technologies to solve data management problems in distributed environments.
- Have the ability to autonomously search a network (wired or wireless) for relevant information, process it appropriately, and organize it into a presentation.

### 3. Syllabus

#### I. Distributed Information Systems as Information Systems

1. The Web. Standards. Access to data on the Web
2. Semi-structured data based on XML and RDF
3. Open Linked Data. Big Data
4. Social Web. Semantic Web. Ubiquitous Web

## 5. Uncertainty Management in Distributed Information Systems

### II. Distributed Information Systems as Distributed Systems

6. Mobile computing. Sensor networks
7. Programming applications for mobile devices
8. Mobile data broadcasting. Mobile agents
9. P2P networks. Sensor networks
10. Semantic mobile services

## 4. Academic activities

- **Interactive lectures** (2 hours per week):
- **Problem solving** (1 hour per week)
- **Laboratory practices**: 2 hours.
- Professional **seminars** and **lectures by external experts** (when possible)
- **Tutoredwork**. In a non face-to-face basis, students will carry out work that will allow them to deepen in specific aspects of the subject that are particularly interesting for them.

## 5. Assessment system

**Continuous assessment:** The student must demonstrate that they have achieved the intended learning results through the following assessment activities:

- **Case**. Completion and presentation in class of a **paper** on a topic related to the subject. [20%]
- **Practice project**. Group work in the laboratory where the knowledge and skills acquired in the subject will be applied. [45%]
- **Written test**, including theory questions and problem solving. [35%]

**Global assessment:** It will consist of a written test and, in the event that the assignments or practicals are not handed in on the established deadlines or the students wish to waive the grade obtained, they will be able to make a single delivery and a defense on the day of the exam of the exam in which they want to pass the subject.