Universidad Zaragoza

Academic Year/course: 2023/24

30221 - Distributed Systems

Syllabus Information

Academic year: 2023/24
Subject: 30221 - Distributed Systems
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
326 - Escuela Universitaria Politécnica de Teruel
Degree: 330 - Complementos de formación Máster/Doctorado
439 - Bachelor's Degree in Informatics Engineering
443 - Bachelor's Degree in Informatics Engineering
ECTS: 6.0
Year: 439 - Bachelor's Degree in Informatics Engineering: 3
330 - Complementos de formación Máster/Doctorado:
443 - Bachelor's Degree in Informatics Engineering: 3

Semester: First semester
Subject type: Compulsory
Module:

1. General information

The Distributed Systems course aims to expand and apply the knowledge acquired in previous subjects about operating systems, computer networks and programming of concurrent and distributed systems. This subject also provides support for concurrent and subsequent subjects, such as Software Engineering, Software Project, Systems Administration II, Web Engineering, Web Systems and Technologies, E-Commerce and Distributed Information Systems . The applied approach of the course allows students to better understand how the theoretical conceptsare applied in the real world and how to manage distributed systems and networks in professional situations.

The objectives and approaches of the course are aligned with the following Sustainable Development Goals of the 2030 Agenda Agenda 2030: target 8.2 of goal 8, targets 7.3 and 7.b of goal 7 and targets 9.5, 9.c and 9.1 of goal 9.

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

- Know the basic fundamentals of distributed systems, services provided and the most relevant technologies, as well as implementation aspects of applications based on them.
- Know the basic fundamentals of security in distributed systems.

3. Syllabus

Basic concepts :

- Architectures. Processes and threads. Communication between processes. Interface definition languages. Client model- server. Status and event management. Synchronization. Logical time. Group communication.

Resource management :

- Appointment of resources. Planning Virtualization. Migration. Mutual exclusion. Election of leader. Blockages.

Technologies:

- Message systems. File systems. Object systems. Web systems. P2P systems.

Fault tolerance:

- Consensus. Distributed transactions. Replication.

Security:

- Encryption services. Kerberos. Digital certificates. Public key infrastructures.

4. Academic activities

In order to achieve the learning objectives of this subject, students should dedicate about 150 hours distributed as follows:

- approximately 56 hours of classroom activities (theory classes, problems and laboratory practice).
- 91 hours of effective personal study (study of notes and texts, problem solving, class and practical preparation, program development).
- 3 hours of final written exam.

The schedule of exams and due dates will be announced well in advance.

5. Assessment system

The assessment of the subject will follow the global assessment procedure.

The global assessment test of the course consists of two parts:

- Written exam in which problems must be solved, conceptual questions must be answered, or an exercise to be solved . A minimum grade of 5.0 on the written exam is required to pass the subject. The grade obtained in this exam will be weighted 70% of the grade of the subject.
- Practical work in the laboratory. It will be assessed that the solutions provided behave according to the specifications, the quality of their design and the time spent. A minimum grade of 5.0 on the written exam is required to pass the subject. The grade obtained is weighted 30% of the grade of the subject. Students who need to obtain the minimum grade required or simply raise their grade in this section may take a comprehensive practical exam to be held on the same day as the written theory exam.

In case of not reaching this minimum in any of these parts, the overall grade of the course will be the minimum between 4.0 and the result of weighting with the percentages of each part.