

Academic Year/course: 2022/23

## 30221 - Distributed Systems

### Syllabus Information

**Academic Year:** 2022/23

**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

## 2. Learning goals

## 3. Assessment (1st and 2nd call)

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The methodologies used in this course are:

- Theoretical lectures explaining the concepts and design of Distributed Systems.
- Problem solving lectures where students apply theoretical knowledge.
- Practical sessions in labs with smaller groups where students design and implement, in computers, different solutions to basic problems.

### 4.2. Learning tasks

The course includes the following learning tasks:

- Study of Distributed Systems concepts.
- Analysis of architectures and technologies.
- Problem-based learning.
- Design and implementation of Distributed System solutions in a lab.

### 4.3. Syllabus

The course will address the following topics:

- Basic concepts: Architectures. Processes and threads. Interprocess communication. Interface definition languages. Client-Server model. Management of events. Timing. Logical time. Group communication.
- Resource management: Assignment of the resource. Scheduling. Virtualization. Migration. Mutual exclusion. Leader election. Locks.
- Technologies: Messaging systems. File systems. Objects systems. Web systems. P2P systems.
- Fault Tolerance: Consensus. Distributed transactions. Replication.
- Security: Cryptographic services. Kerberos. Digital certificates. Public key infrastructures.

#### 4.4. Course planning and calendar

##### Schedule of sessions and presentation of works

The course schedule of sessions and activities will be defined by the academic calendar as organized by the Dean of School and each academic year.

##### Student Work

To achieve the objectives of this subject, students have to spend about 150 hours distributed as follows:

- 56 hours approximately, during learning activities (lectures, problems and practical lab sessions)
- 91 hours of personal study (the study of notes and texts, problems solving, preparation for classes and practices, and learning of the software development process)
- 3 hours for the written final exam

#### 4.5. Bibliography and recommended resources

EINA:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30221>

EUPT:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30221&Identificador=13593>