

## 30322 - Network and Service Programming

### Syllabus Information

**Academic Year:** 2019/20

**Subject:** 30322 - Network and Service Programming

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 438 - Bachelor's Degree in Telecommunications Technology and Services Engineering  
330 - Complementos de formación Máster/Doctorado  
581 - Bachelor's Degree in Telecommunications Technology and Services Engineering

**ECTS:** 6.0

**Year:** XX

**Semester:** Second semester

**Subject Type:** 581 - Compulsory

330 - ENG/Complementos de Formación

438 - Compulsory

**Module:** ---

### 1.General information

#### 1.1.Aims of the course

#### 1.2.Context and importance of this course in the degree

#### 1.3.Recommendations to take this course

### 2.Learning goals

#### 2.1.Competences

#### 2.2.Learning goals

#### 2.3.Importance of learning goals

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

#### 3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

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

#### 4.1.Methodological overview

It should be highlighted that the course was designed with both theoretical and practical approaches. Hence, the learning process essentially requires the students to attend the lectures and the practical laboratory lessons, to develop and implement computer programs of growing complexity, and to study individually.

#### 4.2.Learning tasks

The course includes the following learning tasks:

1. Instructors will introduce the contents of the course by means of lectures (25 teaching hours).
2. The resolution of practical problems in the classroom (5 teaching hours)
3. The development of practical exercises in the laboratory, with the guidance of instructors and implementing theoretical concepts studied in the lectures. (24 hours: 12 sessions of 2 hours each).
4. The design, elaboration, and implementation of practical assignments in groups, led by instructors.
5. The personal work by students.

6. The customized student support during office hours with the objective of revising and discussing materials and concepts introduced during the course.
7. The elaboration of written exams, based on theoretical and practical concepts and the submission of theoretical and practical assignments and reports. All of them will be used for the assessment of the students' progress. More details can be found in the Evaluation section.

### 4.3.Syllabus

- **Programación Concurrent**

- ? Introduction to Concurrency
- ? Motivation
- ? Mutual Exclusion and Synchronisation Concepts
- ? Properties of Concurrent Programs: safety, liveness, and priority
- ? Concepts of Process & Thread
- ? Inter-process Synchronisation Mechanisms
- ? Mutual Exclusion Algorithms
- ? Semaphores
- ? Monitors
- ? Mutual and Partial Exclusion Problems

- **Distributed Systems**

- ? Introduction to Distributed Systems
- ? Software Architectures
- ? Communication Networks: TCP/IP Architecture
- ? The process to Process Communication: Interface Socket TCP & UDP
- ? Channels and Asynchronous and Synchronous Message-Passing
- ? Client-Server Applications: Stateful and stateless server
- ? Introduction to Middleware Technologies

### 4.4.Course planning and calendar

The scheduling of the course is defined by the School every academic year.

### 4.5.Bibliography and recommended resources

[http://biblos.unizar.es/br/br\\_citas.php?codigo=30322&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=30322&year=2019)

**Slides, practical problems descriptions, case studies and practical assignments.**

They can all be found at <http://add.unizar.es>