Universidad Zaragoza

Academic Year/course: 2021/22

30322 - Network and Service Programming

Syllabus Information

Academic Year: 2021/22
Subject: 30322 - Network and Service Programming
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 330 - Complementos de formación Máster/Doctorado
438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
581 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS: 6.0
Year: 581 - Bachelor's Degree in Telecomunications Technology and Services Engineering: 2
438 - Bachelor's Degree in Telecomunications Technology and Services Engineering: 3
330 - Complementos de formación Máster/Doctorado: XX

Semester: Second semester
Subject Type: 581 - Compulsory
438 - Compulsory
330 - ENG/Complementos de Formación
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

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

Concurrent Programming

- 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://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30322

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

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