Universidad Zaragoza

Year : 2019/20

62223 - Distributed Systems and Networking

Syllabus Information

Academic Year: 2019/20
Subject: 62223 - Distributed Systems and Networking
Faculty / School: 110 -

Degree: 534 - Master's in IT Engineering

ECTS: 6.0
Year: 1
Semester: First semester
Subject Type: 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

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as:

Classroom activities

- Lectures. The instructor presents and explains the class contents, including illustrative examples.
- Problem-Based Learning. Educational approach to learning and instruction in which students tackle real problems in small groups under the supervision of the teacher.
- Practice sessions. Any practical and collaborative activity taught in the class.
- Laboratory sessions. Activities done in laboratories with special equipment (computing and networking)
- Tutorials. Students can discuss and review with the teacher the materials explained in the class.
- Assessment. A set of written or oral tests, exercises, laboratory sessions, project, assignments, etc.

Autonomous work

- Assignments. Preparation of seminars, readings, small research projects, documents to be presented on the classroom or handed in to the teacher.

- Coursework. Preparation of activities to be presented or submitted in the practice sessions.
- Study of theory. Exam preparation, library research, readings, problem solving, etc.
- Study of practical contents related to assignments.
- Complementary activities. Optional and voluntary activities unrelated to the exams and grading such as readings, seminars, workshops, videos, etc.

4.2.Learning tasks

The course (150 hours) includes the following learning tasks:

- Lectures (20 hours).
- Practice sessions (10 hours). Problem-solving tasks.
- Laboratory sessions (15 hours).
- Assignments and research projects (20 hours).
- Tutorials (5 hours).
- Autonomous work and study (70 hours).
- Assessment (5 hours). Exam and defense of the course project.

4.3.Syllabus

The course will address the following topics:

1. Basic concepts: Architecture and components. Communication. Coordination. Consistency. Virtualisation
2. High availability: Fault detection. Quorums. Group Communication
3. Cloud systems: Unique image. Elasticity. Example PASS: Cloud Foundry. Example IAAS: Openstack
4. Software Defined Networks: Architecture and Implementation. Abstractions. Network Virtualisation. SDN programming. Applications
5. Cloud distributed services: Scheduling. Storage. Security
6. Administration of distributed systems

4.4.Course planning and calendar

The planning at the Rio Ebro campus is organised as follows:

- Lectures. 2h/week
- Practice sessions and problem-solving tasks 1h/week
- Laboratory sessions 2h/every 2 weeks

The exact hours will be announced beforehand in the Center's and course's websites.
The class projects will be submitted at the end of the semester, on the proposed dates.

4.5.Bibliography and recommended resources