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