Massive computing

Academic Year: (2022 / 2023) **Review date: 10/05/2022 10:41:53**

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: MOLINA BULLA, HAROLD YESID

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Labs will be made using C and Python programming languages.

OBJECTIVES

CB2: Students know how to apply their knowledge to their work or vocation in a professional way and have the necessary skills that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of ¿¿study.
CB3: Students have the ability to gather and interpret relevant data (normally within their area of ¿¿study) to make judgments that include a reflection on relevant issues of social, scientific or ethical nature.
CB5: Students have developed the necessary learning skills to undertake further studies with a high degree of autonomy.
CE10: Ability to use the main technologies used for processing large amounts of data.
CE18: Ability to acquire basic and fundamental knowledge of network architectures.
CE21: Ability to use modern optimization tools to solve practical problems in an efficient manner.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Architecture of computing platforms
2. Processing utilities in the system
3. Massive Storage Systems
4. Massive computing platforms for Big Data
5. Paradigms for Data Massive Computing
6. Frameworks for data-intensive computing

LEARNING ACTIVITIES AND METHODOLOGY

AF1: THEORETICAL-PRACTICAL CLASSES. They will present the knowledge that should be acquired. They will receive the class notes and will have basic texts of reference to facilitate the follow-up of the classes and the development of the subsequent work. Exercises, practical problems on the part of the student will be solved and workshops and evaluation test will be held to acquire the necessary skills.
AF2: Updated to allegation
AF3: INDIVIDUAL OR GROUP WORK OF THE STUDENT.
AF9: FINAL EXAM. In which the knowledge, skills and abilities acquired throughout the course will be assessed globally.
MD1: THEORETICAL LESSONS. Exhibitions in class with both support of computer and audiovisual media, in which the main concepts of the subject are developed and the materials and bibliography are provided to complement the students' learning.
MD2: ASSIGNMENTS. Resolution of practical use cases, problems, etc. raised by the teacher, individually or in groups.
MD3: TUTORIALS. Individualized assistance (individual tutorials) or group (collective tutorials) to students by the teacher.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

CONTINUOUS EVALUATION.
Practical work done during the class: 20% * Practical work done during the class: 20%.
Massive Computing Practice on the Computer: 20% * Heterogeneous Computing Practice (Computer + GPU): 20%.
Heterogeneous Computing Practice (Computer + GPU): 20% * Special Final Practice (Distributed and Heterogeneous): 40%.
Special Final Practicum (Distributed and Heterogeneous): 40% * Special Final Practicum (Distributed and Heterogeneous): 40%.

BASIC BIBLIOGRAPHY

- Benjamin Bengfort ; Jenny Kim Interactive Spark using PySpark, O'Reilly Media, 2016

- Holden Karau ; Rachel Warren High Performance Spark, O'Reilly Media, 2017

- Holden Karau, Andy Konwinski, Patrick Wendell & Matei Zaharia Programming in Scala, Artima.

- Mike Frampton Mastering Apache Spark, Packt Publishing, 2015