Parallel and Distributed Systems

Academic Year: (2023 / 2024) **Review date: 28-04-2023**

Department assigned to the subject: Computer Science and Engineering Department

Coordinating teacher: GARCIA CARBALLEIRA, FELIX

Type: Electives ECTS Credits : 3.0

Year : 1 Semester : 1

OBJECTIVES

- Modelling, and evaluatging paralllel and distributed systems.
- Ability to design parallel and distributed applications.
- To know the main aspect of parallel and distributed system design.
- To know and apply simulation techniques in parallel and distributed systems.
- Ability to analyze technical documents and scientifc papers.
- Ability to transmit the results of a scientific research.

Basic competences: CB6, CB7, CB8, CB9, CB10
General competences: CG3, CG4, CG6
Specific competences: CE2

Other competences to be acquired:

- CA26: Ability to design and evaluate systems based on distributed computing.
- CA27: Ability to model, design, define and organize the architecture of a distributed system, and to be able to apply advanced knowledge of distributed systems and applications.
- CA30: Ability to understand and evaluate the architecture of a high performance computing system.

DESCRIPTION OF CONTENTS: PROGRAMME

- Introduction to distributed and parallel systems
- Distributed system models and algorithms
- Fault tolerance
- Simulation Techniques in Distributed and Parallel Systems
- High Performance Computing
- Large-scale distributed and parallel systems
- Distributed and parallel file systems

LEARNING ACTIVITIES AND METHODOLOGY

- Practical and Theoretical lectures
- Student work

ASSESSMENT SYSTEM

The assessment will be based on:

- Reading and description of research papers (30%).
- Experimental simulation project (40%)
- Reading, analysis and public presentations of research papers by students (30%)

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

BASIC BIBLIOGRAPHY

- Arun Kulkarni, Nupur Prasad Giri, Nikhilesh Joshi, Bhushan Jadhav Parallel and Distributed Systems, 2ed, Wiley, 2016
- Ian Gorton Concurrency and Scalability for Distributed Systems, O'Reilly Media, Inc., , 2022

BASIC ELECTRONIC RESOURCES

- INRIA . Simgrid: http://simgrid.gforge.inria.fr