

Academic Year: (2024 / 2025)

Review date: 18-04-2024

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 evaluating parallel 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 scientific 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

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

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%)

In this course, students should not use artificial intelligence tools to carry out the work or exercises proposed by the faculty. In the event that the use of AI by the student gives rise to academic fraud by

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

falsifying the results of an exam or work required to accredit academic performance, the Regulation of the University Carlos III of Madrid of partial development of the Law 3/2022, of February 24th, of University Coexistence, will be applied.

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>