

Course Syllabi

1. TICS-00065 DISTRIBUTED SYSTEMS

2. 144 credits hours.

3. Bibliography

- Distributed Systems: Principles and Paradigms, Tanenbaum, A. y van Steen, M., 2017

4. Specific Course Information

- a. The objective of this course is for the student to know, in the first instance, the conceptual panorama of distributed systems. It also considers the concepts necessary to be able to design and implement distributed systems, exposing notions such as distributed systems types and the different forms of computing each with its virtues and limitations. The practical part focuses mainly on two areas: parallel computing and distributed computing. To implement a system In addition, we analyze the different forms that exist for the communication of processes that are executed on the same computer (shared memory). With regard to distributed computing, we analyze the different ways of communicating processes through the passage of messages (independent and heterogeneous systems). Technologies such as sockets, RMI and web services are analyzed. Finally, we study the interaction between paral computing. ed and distributed for the construction of modular and scalable systems.
- b. Prerequisites:
 - TICS-00050 PROGRAMMING LANGUAGES
 - TICS-00067 OPERATING SYSTEMS

5. Learning Objectives of the Course

- a. The aim of this course is to make the student understand the principles on which distributed systems are based: architecture, algorithms and design principles.
 - Know the main concepts related to the design and construction of distributed systems.
 - Design distributed systems taking into account functional, performance and scalability aspects.
 - Implement distributed systems using various technologies, each of which presents different degrees of abstraction .
 - Apply the characteristics of concurrent computing to everyday problems that can be implemented locally and distributed.
- b. Learning Outcomes
 - Know the characteristics of concurrent programming.
 - Communicate processes through the use of web services based on soap and rest
 - Differentiates the different models of distributed computing.
 - List the virtues and limitations of distributed programming.
 - He knows the different ways of communicating processes.
 - Communicate distributed processes using sockets in stream mode and datagram sockets.
 - List the virtues and limitations of distributed programming.
 - Know the characteristics of concurrent programming.
 - He knows the different ways of communicating processes.
 - It knows and lists the different alternatives for the implementation of distributed systems.
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 - Communicate distributed processes using sockets in stream mode and datagram sockets.

- Communicate distributed processes using sockets in stream mode and datagram sockets.
- Communicate processes through the use of web services based on soap and rest
- Communicates processes distributed through java rmi.
- Communicate processes through the use of web services based on soap and rest
- Know the characteristics of concurrent programming.
- Communicate distributed processes using sockets in stream mode and datagram sockets.
- Communicates processes distributed through java rmi.
- Knows what a distributed system is and the parts that make it up
- It knows and lists the different alternatives for the implementation of distributed systems.
- Differentiates the different models of distributed computing.
- He knows the different ways of communicating processes.
- Communicates processes distributed through java rmi.

6. Course Topics

- Introduction to the course
- Introduction to distributed systems
- Architectures
- Process
- Communication
- Systems distributed based on objects
- Website-based distributed systems
- Clusters, grid and cloud computing