

Distributed Systems

Course Code:	20CS4703B	Year:	IV	Semester:	I
Course Category:	PEC	Branch:	CSE	Course Type:	Theory
Credits:	3	L-T-P:	3-0-0	Prerequisites:	Data Structures, Operating Systems , Computer Networks
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to

CO1	Understand the fundamental concepts of distributed systems.	L2
CO2	Apply the principles of system models and characteristics of file systems to design distributed systems.	L3
CO3	Apply node level operating system facilities and networking protocols in distributed systems.	L3
CO4	Analyze the principles and techniques behind the design of distributed systems.	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	√													
CO2									√	√				√
CO3	√								√	√				
CO4		√							√	√				

Syllabus		
Unit No.	CONTENTS	Mapped CO
I	Characterization of Distribution Systems – Introduction, Examples of distributed systems, Trends in distributed systems, Challenges, Case study: The World Wide Web.	CO1, CO2
II	System Models – Introduction, Physical models, Architecture models, Fundamental models	CO1, CO2, CO4
III	Networking and Internetworking – Introduction, Types of networks, Network principles, Internet protocols. Inter-process communication – Introduction, Case Study: MPI. Remote Invocation – Introduction, Request reply protocols, Remote procedure calls, Remote method invocation.	CO1, CO3, CO4
IV	Operating System Support – Introduction, The operating system layer, process and threads, virtualization at the operating system level. Transaction and Concurrency Control – Introduction, Transaction, Nested Transaction, Locks, and Optimistic concurrency control.	CO1, CO3, CO4
V	Distributed File Systems – Introduction, Characteristics of file systems, File service architecture, Distributed file system requirements, File service architecture.	CO1, CO2, CO4

Learning Resources
Text Books
1. Distributed Systems: Concepts and Design, George Coulouris, Jean Dollimore, Tim Kindberg, and Gordon Blair, Fifth Edition, 2017, Pearson
References Text Book
1. Distributed Systems: Principles and Paradigms, Andrew S. Tannenbaum and Maarten Van Steen, 2016, Pearson
2. Advanced Concepts in Operating Systems, M. Singhal and N. G. Shivaratri, 2001, McGraw-Hill
e-Resources and other Digital Material
1. https://www.classcentral.com/tag/distributed-systems
2. https://youtu.be/cQP8WApzIQQ
3. https://onlinecourses.nptel.ac.in/noc21_cs87/preview
4. https://online.stanford.edu/courses/cs244b-distributed-systems