

GANPAT UNIVERSITY

FACULTY OF TECHNOLOGY

Programme	Bachelor of Technology				Branch/Spec.	Computer Science & Engineering (BDA)			
Semester	VII				Version	1.0.0.0			
Effective from Academic Year	2018 – 19				Effective for the batch Admitted in	June 2016			
Subject code	2CSE70E18		Subject Name		DISTRIBUTED SYSTEMS				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50
Pre-requisites:									
Operating System, Computer Network, Database management									
Learning Outcome:									
After learning the course the students should be able to									
<ul style="list-style-type: none"> • Understand foundations of Distributed Systems • Understand the concepts of distributed file systems • Apply the idea of peer to peer services and file system • Analyze the issues involved in studying process and resource management 									
Theory syllabus									
Unit	Content								Hrs
1	Introduction to Distributed Systems: Review of Networks, Operating Systems, Concurrent Programming, and Characteristics & Properties of Distributed Systems – Taxonomy - Design goals – Transparency Issues								4
2	Distributed Computing Paradigms: Basic Message Passing Model – The Client Server, Message Passing, RPC basics, RPC implementation, RPC communication and issues, Remote Procedure Call Model – RPC in conventional languages and in Java - The Distributed Objects – The Collaborative Application								6

3	Inter Process Communication Mechanisms: Communication in Distributed Systems, Socket Programming -Client Server examples, I/O Multiplexing, Inetd Super Server – Secure Sockets – The SSL & the Java Secure Socket Extension	6
4	Process Models In Distributed Systems: Processes, Threads - Code Migration; Software Agents – CSP Distributed Processes - Naming with Mobile Entities - Unreferenced Objects	3
5	Synchronization: Clock Synchronization – Logical clocks – Election Algorithms – Distributed Mutual Exclusion	6
6	Consistency and Replication: Motivation, Object Replication, Consistency Models, Distribution Protocols – Consistency Protocols	4
7	Fault Tolerance: Failure Models – Process Resilience – Reliable Client Server and Group Communications – Distributed Commit Protocols – Check-pointing and Recovery - Distributed Databases - Distributed Transactions	6
8	Distributed File System: File system, DFS- definition, Characteristics, Goals, SUN NFS-NFS Architecture, NFS Implementation, Protocols, The CODA file system-Design Overview, An Example, Design Rational, Implementation, The GOOGLE file system-Definition, Architectures, GFS Architecture	6
Practical content		
<ul style="list-style-type: none"> • Write a Program to implement Concurrent Echo Client Server Application. • Write the Programs for Remote Procedure call. • Write the Programs for Remote Method Invocation. • Write the Programs for Thread Programming in JAVA. • Implement CORBA file. • Write a Program to Increment a Counter in Shared Memory. • Implement Network File System (NFS). • Creation of a BPEL(Business Process Execution Language) Module and a Composite Application. • Study of Web Service Programming. • 10.Study of Grid Services using various Tools 		
Text Books		
1	A S Tanenbaum, Martin Steen,"Distributed Systems: Principles and Paradigms", 2/E,PHI, 2006	
Reference Books		
1	Colouris,Dollimore,Kindberg, "Distributed Systems Concepts & Design", 4/E,Pearson Ed. 2005	