Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India

(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
TEITC602	Distributed Systems	4	-	-	4	-	-	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60%Weightage)		

Pre-requisite Course Codes	TEITC502 (Operating Systems)	
After successful completion of the course, student will be able to:		
Course Outcomes	CO1	Describe the fundamental concept of distributed system
	CO2	Apply message communication technique and develop the applications.
	CO3	Compare the clock synchronization algorithm in distributed system.
	CO4	Use distributed system technologies like EJB, CORBA and .NET.

Module No.	Topics	Ref.	Hrs.
1	**Fundamentals** Introduction, Distributed Computing Models, Software Concepts, Issues in designing Distributed System, Client – Server Model	1,2	4
2	**Communication** Message Passing , Introduction to Message Passing, Advantages and features of Message Passing, Message Format, Message Buffering, Multi Data gram Messaging ,Group Communication. Remote Procedure Call (RPC): Basic RPC Operations, Parameter Passing, Extended RPC Models. Remote Object Invocation: Distributed Objects, Binding a Client to an Object, Static Vs Dynamic RMI, Parameter Passing, Java RMI. Message Oriented Communication: Persistence and synchronicity in communication, Message Oriented Transient and Persistent Communications	1,2	8
3	**Processes** Threads, Code Migration: Approaches to Code Migration, Migration and Local Resources, Migration in Heterogeneous Systems	1,2	4

4	**Synchronization** Clock Synchronization, Physical and Logical Clocks, Global State, Election Algorithms, Mutual Exclusion, Distributed Transactions, Deadlocks	1,2,6	8
5	**Consistency and Replication** Introduction Data-Centric Consistency Models, Client Centric Consistency Models, Distributed Protocols	1,2,4,6	8
6	**Distributed Technologies and Frameworks** Overview of EJB S/W Architecture, view of EJB Conversation, Building and Deploying EJB, Roles in EJB, Types of Enterprise Beans, Lifecycle of Beans , Developing Applications using EJB Framework.	3	5
	Introduction to CORBA, CORBA Components and architecture, Method Invocation, Static and Dynamic Invocation in CORBA, CORBA IDL, Developing Application using CORBA	2,3,4	4
	Introduction to .NET, .NET architecture, NET Remoting	3	3
	Comparison of RMI, CORBA, EJB, .NET	3	1
7	**Service Oriented Architecture** Defining SOA, Business value of SOA, SOA characteristics, Concept of a service, SOA Architecture, Deploying SOA applications.	5	3
Total Hours of instructions			48

References:
1. Sunita Mahajan, Seema Shah, " *Distributed Computing*", Oxford, second edition.
2. Andrew S. Tanenbaum & Maarten van Steen *" Distributed Systems : Principles and paradigms*" Prentice Hall of India Private Limited
3. G. Sudha Sadasivam, Radha Shankarmani, "*Middleware and Enterprise Integration Technologies*" , Wiley Precise Textbook
4. .Pradeep K. Sinha "*Distributed Operating Systems*", Prentice Hall of India Private Limited
5. Thomas Erl "*Service Oriented Architecture : Concepts, Technology and Design*" Prentice Hall
6. G. Coulouris, J. Dollimore and T. Kindberg "*Distributed Systems* ".