



Sub Committee for Curriculum Development

Course Name: Distributed Computing

(UG/PG): UG

Number of Credits: 2

Level: 03

Learning Objective(s):

The objective of this course is to introduce you to the key ideas that have shaped distributed computing. The ambition of this course is to get you as excited about them. The thing about distributed computing that really grabbed when it became exposed to it was how its tremendous practical impact was based on beautiful, elegant, theoretical foundations. Classes focuses on fundamentals: We will cover problems, models and impossibility results. But to keep ourselves honest, you will integrate the theoretical discussions with substantial projects that will allow to apply some of the concepts discussed in the class.

Pedagogy:

Lectures
Class room discussion
Case study discussions

Pre-requisites:

Student should have basic knowledge of Computer Networking in terms of bits, nibble, frames, packet, usage of different types of layers, router, switches, topologies etc.

Course Outline

Sr. No.	Topics	Hrs
1	Introduction: Distributed systems, Goals, Challenges and issues	3
2	Distributed System Models: Architecture (Hardware, Software) : introduction, requirement Communication model: Need of model, how to use it Failure model : example of failure model by using fault detection methods Security model: Need of security, assets identification and discussion about threat and vulnerability	6
3	Communication (Internet working): Types, Topologies e.g., bus topology, ring topology Switching Techniques, Protocols: Need and usage of TCP / IP, how to replace this with SOAP OSI Model: Discussion on seven layers	6

4	Processes: Process and Threads: definition, need of the processes and threads with respect to need of application Interprocess Communication : discussion on concepts Remote Procedure call : need and discussion on power of technology Remote Method Invocation : need and discussion on power of technology	6
5	Process Coordination-Synchronization: Clock, Clock Synchronization: usage and need Logical Clock	3
6	Name services: Names, Name resolution: introduction and concepts Domain name System: need and functioning Directory services: discussion on ldap server with respective to lookup and directory services	6
Total No. of Hrs		30

Book Recommended:

- 1) Distributed Systems -Modern Approach - Colouris
- 2) Coulouris G., Dollimore J. & Kindberg T., "*Distributed Systems Concepts And Design*", 3/e, Addison Wesley 2004
- 3) Tanenbaum S, Maarten V.S., Distributed Systems Principles and Paradigms, Pearson Education 2004
- 4) Chow R. & Johnson T., "*Distributed Operating Systems and Algorithms*", Addison Wesley 2003
- 5) Tanenbaum S., "*Distributed Operating Systems*", Pearson Education 2005

Research Papers/Articles recommended for reading:

- NA

Suggested Evaluation Methods:

- Theory Assignment
- On line exams

Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered

Name of Member	Pravin Metkewar	Harshad Gune		
Designation	Associate Professor	Deputy Director		
Org. / Inst.	SICSR	SICSR		
Signature				

Name of the Expert:

Signature:

Date: