1.	Title of the course	Distributed Systems
2.	Course number	CS523L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CS5208/12
6.	To be offered by	Department of Computer Science and Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** This course is to introduce how large-scale, distributed computational systems are built. The focus primarily is on the principles, architectures and algorithms used in distributed systems and examine state-of-the-art distributed systems, such as Google File System, Peer-to-Peer systems.	
10.	**Course Content:** Models of computation: shared memory and message passing systems, synchronous and asynchronous systems. Logical time and event ordering. Global state and snapshot algorithms, mutual exclusion, clock synchronization, leader election, deadlock detection, termination detection, spanning tree construction. Programming models: remote procedure calls, distributed shared memory. Fault tolerance and recovery: basic concepts, fault models, agreement problems and its applications, commit protocols, voting protocols, checkpointing and recovery, reliable communication. Security and Authentication: basic concepts, Kerberos. Resource sharing and load balancing. Special topics: distributed objects, distributed file systems, distributed databases, directory services, web services.	
11.	**Textbook(s):** 1. Andrew S Tanenbaum, and Van Steen, *Distributed Systems: Principles and Paradigms*, Pearson Education India (2015).	
12.	**Reference(s):** 1. Ajay D Kshemkalyani and Mukesh Singhal, *Distributed Computing: Principles, Algorithms, and Systems*, Cambridge University Press (2010). 2. Sukumar Ghosh, *Distributed Systems: An Algorithmic Approach*, Chapman and Hall/CRC, (2014).	