CS633 DISTRIBUTED COMPUTING

(Elective –I)

Objectives of the Course:

The student should have learned the following:

- The differences among concurrent, networked, distributed, and mobile.
- Resource allocation and deadlock detection and avoidance techniques.
- Remote procedure calls.
- IPC mechanisms in distributed systems.

UNIT - I
Introduction: The different forms of computing – Monolithic, Distributed, Parallel and cooperative computing, the meaning of Distributed computing, Examples of Distributed systems, the strengths and weaknesses of Distributed computing, operating system concepts relevant to distributed computing, the architecture of distributed applications.

UNIT - II
Distributed Computing Paradigms: Paradigms for Distributed Applications – Message Passing Paradigm, The Client-Server Paradigm (Java Socket API), The peer-to-peer Paradigm, Message system (or MOM) Paradigm – the point-to-point message model and the publish/subscribe message model, RPC model, The Distributed Objects Paradigms – RMI, ORB, the object space Paradigm, The Mobile Agent Paradigm, the Network Services Paradigm, The collaborative application (Groupware Paradigm) choosing a Paradigm for an application.

UNIT - III
Distributed Objects Paradigm (RMI): Message passing versus Distributed Objects, An Archetypal Distributed Object Architecture, Distributed Object Systems, RPC, RMI, The Java RMI Architecture, Java RMI API, A sample RMI Application, steps for building an RMI application, testing and debugging, comparison of RMI and socket API

Distributed Object Paradigm(CORBA): The basic Architecture, The CORBA object interface, Inter-ORB protocols, object servers and object clients, CORBA object references, CORBA Naming Service and the Interoperable Naming Service, CORBA object services, object Adapters, Java IDL, An example CORBA application.

UNIT IV
Distributed Document-based Systems: WWW, Lotus Notes, comparison of WWW and Lotus Notes, Distributed Coordination-based systems – Introduction to coordination models, TIB, JINI, comparison of TIB and JINI - Software Agents, Agent Technology, Mobile Agents –

Distributed Multimedia Systems: characteristics of multimedia data, QOS of service management, Resource Management, Stream Adaptation
UNIT - V

**Grid Computing:** Definition of grid, grid types – computational grid, data grid, grid benefits and applications, drawbacks of grid computing, grid components, grid architecture and its relation to various Distributed Technologies - **Cluster Computing:** Parallel computing overview, cluster computing – Introduction, Cluster Architecture, parallel programming models and Paradigms, Applications of Clusters.

**TEXT BOOKS:**

**REFERENCES BOOKS :**