	DISTRIBUTED SYSTEMS AND NETWORKS
Topics	
Week 1/2	**Overview** **Introduction to Distributed Systems** • Hardware Concepts • Distributed Operating System • System / coupling types • The middleware • Design issues of Distributed Systems • Components of a Distributed System
Week 2/3	**Features and types of distributed systems**. • Communications in Distributed Systems • Models of Communication in a Distributed Computing System • Multicasting • Applications of client server • Protocols and Networks • Client – server model • Characteristics of Distributed Computing Systems. • Advantages of Distributed Systems ➢ **ASSIGMENT 1**
Week 4&5	• Inter Process Communication (IPC) • MI (Remote Method Invocation) • Creating Distributed Applications Using RMI • Remote Procedure Call (RPC) • Failure Handling • Distributed Systems and Object Oriented Models **CAT 1**
Week 6	**Distribution Transparency** • Definition • Transparency choices • Different transparencies • Issues in Design of Distributed Computing systems
Week 7	**Synchronization** • Types of clocks • Clock Synchronization

	• Mode of Synchronization • Synchronization Algorithms
Week 8	**Directory Services** • Terminology • Names, Identifiers and Addresses • Name Spaces • Name Resolution • Implementing a Directory Service • Name Space Distribution • Iterative name resolution • Application
Week 9	**Atomic transactions** • Transaction implementation • Concurrency control approaches • Optimistic Concurrency control Deadlocks in distributed systems • Algorithms used in DS • Processes and Processor ➢ **ASSIGNMENT 2**
Week 10/11	Fault Tolerance • Basic Concepts • Dependability • Generally Faults classification • Design approaches suggested for building dependable distributed systems exhibit a high level of stability and fault tolerance. • Failure Models • Failure Masking by Redundancy • TMR (Triple Modular Redundancy)
Week 12	• **Sitting CAT 2** • Presentations
Week 13/14	Distributed File Systems • File service model • Implementation Variances • Caching • Class time and replication • Sun Network File system • Application **File Replication** • Definition • Advantages of file replication. • Replication transparency

	• Replication control. • Replication process
Week 14	**Security** • Distribution of security mechanisms, • Access control • security management • Security threats • Security measures • Application
Week 15	**Examinations/Revision**
Teaching Methodology	• Lectures and tutorials • Group discussions • Demonstration • Individual assignment
Instructional Material/ Equipment	• Audio Visual aids in lecture rooms and theatre rooms • Virtual • E-materials
Assessment	A learner is assessed through ; • Continuous Assessment Tests (CATs) (30%) • End of semester examination (70%)
Required Text Books	Required text and materials DISTRIBUTED SYSTEMS Second Edition Andrew S.Tanenbaum Maarten Van Steen
Text Books for Further Reading	
Other Support Material	• Various application manuals and journals • Computer with Internet access is required. • Internet materials