

Course Code	Course Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CS5EL01	ADVANCED OPERATING SYSTEMS	2	0	0	2	2

UNIT- I

Process Synchronization

Introduction, Design Approaches, Synchronization Mechanisms: Concurrent Process, Critical Section Problem, Other Synchronization Problems, Process Dead Locks: Models of Dead Locks, Models of Resources, Necessary Conditions of Dead Lock

UNIT-II

Distributed Operating Systems

Architecture of Distributed Operating Systems: Communication Networks, Communication Primitives, Inherent Limitations of Distributed Operating Systems, Lamport's Logical Clocks, Vector Clocks, Global State, Distributed Mutual Exclusion : Solution for Mutual Exclusion , Token Based Algorithms, non Token Based Algorithms, Distributed Dead Lock Detection: Dead Lock handling strategies, issues in Dead Lock Detection and Resolution, Centralized Dead Lock Detection Algorithms, Distributed Dead Lock Detection Algorithms, Hierarchical Dead Lock Detection Algorithms.

UNIT-III

Distributed Resource Management

Distributed File Systems: Mechanisms for build DFS, Design Issues. Distributed Shared Memory: Algorithms for building DSM, Coherence Protocols, Design Issues. Distributed Scheduling: Issues in Load distribution, Components of Load distribution Algorithms, Load Distributing Algorithms. Failure Recovery and Fault Tolerance. Recovery: Backward and Forward error recovery, Synchronous Check pointing and Recovery, Asynchronous Check pointing and Recovery, Recovery in Replicated Distributed Data Base Systems. Fault Tolerance: Commit Protocols, Non Blocking Commit Protocols, Voting Protocols (Dynamic and Static).

UNIT-IV

Multi Processor Operating Systems

Multi Processor System Architecture: Interconnection Networks for Multiprocessor Systems, Caching, Hyper Cube Architecture, Multi Processor Operating Systems: Type of Threads, Process Synchronization Processor Scheduling, Memory Management. Reliability / Fault Tolerance.

UNIT-V

Database Operating Systems

Introduction, Concurrency Control, Concurrency Control Algorithms: Lock Based Algorithms, Time Stamp Based Algorithms, Optimistic Algorithms.

TEXT BOOKS

1. M Singhal and NG Sivaratri, Advanced Concepts in Operating Systems, TataMcGraw Hill
2. A.S.Tanenbaum, Distributed Operating system, Pearson Education.
- 3 A.S. Tanenbaum, Modern Operating system, Prentice Hall

REFERENCES

- 1.Kskhemkalyani, A and Singhal, M. Distributed computing: Principles, Algorithms, and systems. Cambridge University Press.
- 2.Silberschatz and P. Galvin, Operating System Concepts, Addison Wesley