

PIT7G002 Advanced Operating System (MINOR SUBJECT) 4-0-0

Module I

Process Synchronization

Concepts of processes, Concurrent processes, Threads, Overview of different classical synchronization problems, Monitors, Communicating Sequential processes(CSP)

Process deadlocks

Introduction, causes of deadlocks, Deadlock handling strategies, Models of deadlock

Module II

Distributed operating system

Architectures, Issues in Distributed operating systems, Limitations of Distributed Systems, Lamport's logical clock, Global states, Chandy-Lamport's global state recording algorithm, Basic concepts of Distributed Mutual Exclusion, Lamport's Algorithm, Ricart - Agrawala Algorithm; Basic concepts of Distributed deadlock detection, Distributed File system, Architecture, Design issues, SUN Network File system Basic concepts of Distributed shared memory, Basic concepts of Distributed Scheduling, Load balancing, Load sharing

Module III

Distributed OS Implementation

Models, Naming, Process migration, Remote Procedure Calls.

Multiprocessor System

Motivation, Classification, Multiprocessor Interconnections, Types, Multiprocessor OS functions & requirements; Design & Implementation Issue; Introduction to parallel programming; Multiprocessor Synchronization.

Module IV

Performance, Coprocessors, RISC & data flow

Introduction, Necessity, Measures, Techniques, Bottlenecks & Saturation, Feedback loops, Coprocessors, RISC.

Analytic Modeling

Introductions, Queing Theory, Markov Process

Security & Protection

Security-threats & goals, Penetration attempts, Security Policies & mechanisms, Authentication, Protections & access control Formal models of protection, Cryptography, worms & viruses.

Books:

- 1) Operating Systems Concepts & design - Milan Milenkovic, TMH
- 2) Operating System - H.M. Deitel, Pearsons .
- 3) Advanced Concepts in operating Systems - Mukesh Singhal and Niranjana G. Shivaratri, TMH