SYLLABUS
OPERATING SYSTEMS

Importance:

Importance of Operating Systems, Basic Concepts and Terminology, An Operating System Resource

Manager:

Memory Management Functions, Processor Management Functions, Device Management Functions, Information Management Functions., Operating system concepts, Files and Security, System calls for Process Management, for File Management and for Directory Management.PROCESS

Management Processes:

Concept, Processes and Threads. Process Model and Thread Model.Job Scheduler, Process Scheduling, operation on process,.

Overview of Inter-process communication: Race Conditions, Critical Regions, Mutual Exclusion with busy waiting etc.

CPU Scheduling:

Introduction to Scheduling,Scheduling criteria, Scheduling Algorithms, Algorithm Evaluation and Scheduling in different Systems.

Process Synchronization:

Synchronization Hardware, Semaphores, and Classical Problem of Synchronization, Monitors and Atomic TransactionDEADLOCKSIntroduction to Deadlocks: Resources, conditions for Deadlocks and Deadlock modeling, Deadlock Characterization.

Deadlock Detection & Recovery:

With one Resource of each type and With Multiple Resource of each type.

Deadlocks Avoidance:

Safe and Unsafe states, The Banker's Algorithm for a single Resource and for Multiple Resource.

Deadlocks Prevention:

Attacking the Mutual Exclusion, Hold and Wait, No Preemption and Circular conditions.STORAGE MANAGEMENT Basic Memory Management Partition of Memory. Multiprogramming with fixed partitions.Logical versus Physical Address Space, Swapping, Contiguous Allocation,

Virtual Memory:

Demand Paging, Page Replacement, Page Replacement Algorithms, and Allocation of Frames, Thrashing, and Demand SegmentationINFORMATION MANAGEMENTIntroduction; File Concept, Directory Structures, Protection, Overview of File-System Structure, Allocation Method, Free-Space Management, Directory Implementation