

Operating System Imp Topics

Syllabus:

Sr No	Module	Detailed Contents	Hours
1	Introduction to System Software & operating System	Introduction to System Software & operating System Overview of all system softwares: Compiler, Assembler, Linker, Loader, Operating system, OS services and Components, Types <u>Types of OS</u> -Batch, multiprocessing, multitasking, timesharing, Distributed OS, Real time OS, virtual machines, System Calls, types of System calls, Buffering, Spooling (***), <i>short notes</i>	5
2	Process and Thread Management	Process and Thread Management: - Concept of process and threads, <u>Process states</u> , Process management, Context switching, <u>Interaction between processes and OS</u> , (***), Multithreading, CPU scheduling algorithms, multiprocessor scheduling algorithms, <u>Real time scheduling algorithms</u> (**), <i>(numerical) (***)</i>	10
3	Concurrency Control	Concurrency Control: Concurrency and Race Conditions, <u>Mutual exclusion requirements</u> , Software and hardware solutions, <u>Semaphores</u> , <u>Monitors</u> , <u>Classical IPC problems and solutions</u> , <u>Deadlock</u> , Characterization, Detection, Recovery, Avoidance and Prevention <i>Banques (***)</i>	8
4	Memory Management	Memory Management: Memory partitioning, Swapping, <u>Paging</u> , <u>Segmentation</u> , <u>Virtual memory</u> , Overlays, Demand paging, Performance of Demand paging, Virtual memory concepts, <u>Page replacement algorithms</u> , Allocation algorithms <i>Page replacement numerical (***)</i>	9
5	Mass Storage Structure	Mass Storage Structure: Secondary-Storage Structure, (**) <u>Disk structure</u> , <u>Disk scheduling</u> , <u>Disk management</u> , <u>Swap-space management</u> , Disk reliability, Stable storage implementation, Introduction to clock, <u>Clock hardware</u> , (*) <u>Clock software</u> (*) <i>numerical (**)</i>	
6	File systems	File systems: File concept, File support, <u>Access methods</u> , (***), <u>Allocation methods</u> , Directory systems, File protection, Free space management	
7	Protection & Security	Protection & Security: Protection- Goals of protection, <u>Domain of protection</u> , <u>Access matrix</u> , Implementation of <u>access matrix</u> , <u>Revocation of access rights</u> <u>Security</u> -) The security problem, Authentication, One-Time passwords, Threats (***)	4
8	Case Study	Case Study : Study of different Operating, Systems(Linux, Windows, Android OS, iOS)	5