SYLLABUS

CS630204 - OPERATING SYSTEMS

Course Category: Programme Core	Course Type: Theory with practical Component	L	T	P	C	
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COURSE OBJECTIVES:	

- To gain knowledge about various advanced techniques and concepts involved in operating systems
  - To incorporate knowledge to processes and threads
  - To know the concept of semaphore and deadlock
  - To study about the various storage strategies
  - To study about the concepts of I/O systems

UNIT 1: OPERATING SYSTEMS OVERVIEW	6

Operating system – Main frame systems – Desktop systems – Multiprocessor systems – Distributed systems – Clustered systems – Real-time systems – Handheld systems – Operating System structures: System components – Operating system services - System calls – System programs – System structure

UNIT 2: PROCESSES AND THREADS	6

Process: Process concept – Process scheduling – Operations on processes – Cooperating processes – Interprocess communication – Communication in client-server systems - Threads: Overview - Multithreading models – Threading issues – Pthreads - CPU Scheduling: Basic concepts - Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling

UNIT 3: PROCESS MANAGEMENT	6

Process synchronization: The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchronization – Critical regions – Monitors –Deadlocks: System model – Deadlock characterization – Methods for handling deadlocks – Recovery from deadlock

UNIT 4: STORAGE MANAGEMENT	6

Memory Management: Background -Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging - Virtual Memory: Background – Demand paging – Process creation – Page replacement – Allocation of frames – Thrashing

UNIT 5: I/O SYSTEMS	6

File-system interface: File concept – Access methods – Directory structure – File-system mounting – File sharing - Protection – File-system implementation: Directory implementation – Allocation methods – Free space management – Mass storage structure: Disk structure - Disk scheduling – Disk management – Swap space management