WITH EFFECT FROM THE ACADEMIC YEAR 2012 - 2013

CS 302

OPERATING SYSTEMS

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks Sessional 25 Marks

UNIT-I

Introduction to operating systems: OS structure and strategies, Process concept, Interprocess communication, Threads, Multithreaded programming.
Process scheduling: Scheduling criteria, Scheduling Algorithms, Multi Process scheduling, Thread Scheduling.

UNIT-II

Memory Management, swapping, contiguous allocation, paging, static and dynamic partition, demand paging, page replacement algorithms, thrashing, segmentation with paging, Virtual memory.
File System Interface: File Concept, Access Methods, Directory Structure, File System Mounting, File sharing, protection.
File System implementation: File system structure, File system implementations, Directory implementation, Allocation Methods, Free space management, Efficiency and performance, recovery.
Case Studies: UNIX file system, Windows file system

UNIT-III

Process Synchronization: Critical section problem, semaphore, monitors**.**
Deadlocks: Necessary conditions, resource allocation graph, methods for handling deadlocks, preventions, avoidance, detection and recovery, protection, goals of protection, domain of protection, access matrix .

UNIT-IV

Device Management: Disk structure, Disk Attachment, Disk Scheduling, Disk Management, RAID Structure, Stable storage implementation.
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I/O System: I/O hardware, Application I/O interface, Kernel I/O Subsystem, Transforming I/O request to hardware operation, STREAMS.

UNIT-V

Case Studies:
LINUX System: Design Principles, Kernel Modules, Process Management, Scheduling Memory Management, File Systems, Input and Output, Interprocess communication, Network Structure, Security.
Windows XP: Design Principles, Architecture, Environmental subsystem, File Subsystem, Networking, Programming interface, Android OS

Suggested Reading:

1. Abraham Silberchatz, Peter B.Galvin, Greg Gagne, *Operating System-Concepts*, Wiley India, 2006.
2. Andrew S.Tanenbaum, *Modern Operating Systems*, Third Edition, Pearson education, Asia-2008.
3. DhananjayM.Dhamdhere, *Operating System-concept based approach*, third edition, Tata McGraw Hill, Asia-2009.
4. Robert Love: *Linux kernel Development*, Pearson Education, 2004.