CS9252   **OPERATING SYSTEMS**   **L T P C**
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AIM:
The course introduces the students to the basic principles of operating systems.

OBJECTIVES:
- To be aware of the evolution of operating systems
- To learn what processes are, how processes communicate, how process synchronization is done and how to manage processes
- To have an understanding of the main memory and secondary memory management techniques.
- To understand the I/O Subsystem
- To have an exposure to Linux and Windows 2000 operating systems

UNIT I   OPERATING SYSTEMS OVERVIEW   9

Operating system – Types of Computer Systems – Computer-system operation – I/O structure – Hardware Protection – System components – System calls – System programs – System structure – Process concept – Process scheduling – Operations on processes – Cooperating processes – Interprocess communication – Communication in client-server systems – Multithreading models – Threading issues – Pthreads.

UNIT II   PROCESS MANAGEMENT   10

Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation – Process Scheduling Models - The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchronization – Critical regions – Monitors – System model – Deadlock characterization – Methods for handling deadlocks – Recovery from deadlock

UNIT III   STORAGE MANAGEMENT   9

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

UNIT IV   I/O SYSTEMS   9

File concept – Access methods – Directory structure – File-system mounting – Protection – Directory implementation – Allocation methods – Free-space management – Disk scheduling – Disk management – Swap-space management.

UNIT V   CASE STUDY   8

The Linux System – History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory management – File systems – Input and Output – Inter-process Communication – Network Structure – Security – Windows 2000 – History – Design Principles – System Components – Environmental subsystems – File system – Networking.

TOTAL= 45 PERIODS

TEXT BOOKS:
1. Silberschatz, Galvin and Gagne, "Operating System Concepts", Sixth Edition, John Wiley & Sons Inc 2003.

REFERENCES:
1. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Addison Wesley, 2001.
2. Gary Nutt, "Operating Systems", Second Edition, Addison Wesley, 2003.
3. H M Deital, P J Deital and D R Choffnes, "Operating Systems", Pearson Education, 2004.