

SARDAR PATEL UNIVERSITY
Programme: MCA
Semester: III
Syllabus with effect from: June 2014

Paper Code: PS03CMCA01	Total Credit: 4
Title Of Paper: Operating System Principles	

Unit	Description in detail	Weighting (%)
1	Introduction to Operating Systems Understanding the role of operating systems, Evolution of computer architecture and operating systems, Operating system services, Operating system interfaces, device drivers, system calls, Shells, Operating system design, major components Computing environments, Virtual machines, system booting	
2	Process Management The concept of a process, Scheduling of processes, Interprocess communication Communication between remote processes, Multithreading: concepts, advantages, models, libraries, issues, Schedulers: long term, middle term, short term CPU scheduling: criteria, algorithms and their evaluation, multiprocessor scheduling, thread scheduling	
3	Support for Concurrent Processes Introduction to process synchronization, The critical section problem and Peterson's solution Synchronization hardware, Semaphores and their uses, Classic problems of synchronization, Monitors Deadlocks and methods to handle them, including prevention, avoidance and detection and recovery from them	
4	Memory Management - I Need for and importance of proper memory management, Swapping, Paging, Page table organizations, Issues with paging, Segmentation, Paging with segmentation, Example of the Intel x86 processor (386 onwards)	
5	Memory Management - II Virtual memory, Demand paging, Page replacement, Allocation of frames Selection of page size and its impact on performance, Various issues in virtual memory systems	
6	Secondary Storage Management File Systems, Disk Scheduling, RAID structures	

Basic Text & Reference Books

- Silbetschatz, Galvin, Gagne : Operating System Concepts, 8th edition, John Wiley and Sons, Inc., 2008
- Tanenbaum A. S. : Modern Operating Systems, 3rd edition, Prentice-Hall, 2008
- Nutt G. : "Operating Systems" : 3rd Edition, Pearson Education, 2004
- Tanenbaum A. S., Woodhull A.S. : "Operating Systems Design and Implementation", 3rd edition, Prentice Hall, 2006

