CS-402: OPERATING SYSTEMS

Teaching Scheme			Credits	Marks			Duration End Semester Examination
L	T	P/D	C	Sessional	End Semester Exam	Total	
3	1	0	4	40	60	100	3 hrs

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	**Basic Concept of Operating System:** Evolution of operating system, fundamental of operating system functions, multiprogramming, multiprocessing, time-sharing systems and real time systems, software layers & virtual machine, operating system principles, structuring methods (monolithic, layered, modular, microkernel models).	10
II	**Process Management:** Processor scheduling, threads, scheduling model, CPU scheduling algorithms, CPU scheduling algorithm, concurrent process - introduction, concurrency specifications, process graphs, process creation & termination, introduction to conflicts due to concurrency, simple examples to illustrate the problem, critical section problem, semaphores, classical process co-ordination problem. **Deadlock:** introduction, analysis of conditions, prevention & avoidance, detection & recovery.	10
III	**Memory Management:** Contiguous memory allocation, overlays, fixed partitioning vs. variable partitioning, paged memory, segmentation and virtual memory, page replacement algorithms. **File Management:** File concepts, access methods, directory structure, file protection, file system structure, allocation methods, and secondary storage management - disk structure, disk scheduling, disk management, swap-space management, and disk reliability.	10
IV	**Protection and security:** Security attacks, security mechanisms and policies. **Virtual Machines:** Types of virtualization (including hardware/software, OS, server, service, network). Unix/Linux/ case study / seminar on state-of the-art technology.	9

Text Books

1. Silberschatz A, Galvin P.B. and Gagne G., ***"Operating System Concepts"***, John Wiley.
2. Stallings Willam, ***"Operating Systems Internals and Design Principles"***, Prentice Hall.

Reference Books

1. Dhamdhere D.M., ***"Operating Systems: A Concept Based Approach"***, McGraw Hill.
2. Flynn I.M. and Mc Hoes A.M., ***"Understanding Operating Systems"***, Thomson.