Course Title : Operating System			
Course Code : P18CS52	**Semester : 5**	**L :T:P : 4:0:0**	**Credits: 4**
Contact Period: Lecture: 52 Hrs, Exam: 3 Hrs		**Weightage: CIE:50%, SEE:50%**	

Course Content

Unit–1

INTRODUCTION TO OPERATING SYSTEMS : Overview: Need of operating systems, Computer System organization, Computer System architecture, Operating System structure, Operating System operations, Process management, Memory management, Storage management, Protection and security, Distributed system, computing environments.

System structure: Operating System Services, User- Operating System interface, System calls, Types of system calls, System programs, Operating System design and implementation, Operating System structure, , System boot.

Self-study component: Virtual machines

10 Hours

Unit-2

PROCESS MANAGEMENT: Process concepts: Overview, Process scheduling, operations on processes, Inter-process communication.

Multi-Threaded Programming: Overview, Multi-threading models, Thread Libraries, threading issues.

Process Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms, Multiple-Processor scheduling

Self-study component: Thread scheduling

11 Hours

Unit-3

PROCESS SYNCHRONIZATION : Synchronization: Background, The Critical section problem, Peterson's solution, Synchronization hardware, Semaphores, Classical problems of synchronization, Monitors

Deadlocks: Deadlocks: System model, Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance,

Self-study component: Deadlock detection and recovery from deadlock

10 Hours

Unit-4

MEMORY MANAGEMENT AND PROTECTION : Memory Management Strategies: Background, Swapping, Contiguous memory allocation, Paging, Structure of page table, Segmentation.

Virtual Memory Management: Background, Demand paging, Copy-on-write, Page replacement, Allocation of frames,

Self-study component: Thrashing.

10 Hours

Unit-5

STORAGE MANAGEMENT AND CASE STUDY : File system: File concept, Access methods, Directory structure, File system mounting, File sharing, Protection.

Implementing File System: File system structure, File system implementation, Directory implementation, Allocation methods, Free space management.

Secondary storage structures: Mass storage structures, Disk structure, Disk attachment, Disk scheduling,

Self-study component: Disk management, Swap space management.

11 Hours

Text Book:

1. Operating System Principles – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 9th edition, Wiley-India, 2012.

Reference Books:

1. Operating Systems: A Concept Based Approach – D.M Dhamdhere, 2nd Edition, Tata McGraw- Hill, 2006.
2. Operating Systems – William Stallings, 6th Edition, PHI, 2009.
3. Operating Systems – Harvey M Deital, 3rd Edition, Addison Wesley, 1990

Course outcomes

1. **Explain** operating system structure, services, types, design and implementation of OS
2. **Apply** the various algorithms of process scheduling.
3. **Develop** solutions to process synchronization and dead lock problems.
4. **Analyze** various memory management techniques.
5. **Explain** file system implementation and allocation methods

CO-PO Mapping

Semester: 6th		Course code : P18CS52					Title : Operating System								
CO	**Statement**	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2
CO1	**Explain** operating system structure, services, types, design and implementation of OS	1												2	
CO2	**Apply** the various algorithms of process scheduling.	1	1	1										2	
CO3	**Develop** solutions to process synchronization and dead lock problems.	1	1	1										2	
CO4	**Analyze** various memory management techniques	1	1	1										2	
CO5	**Explain** file system impleme-ntation and allocation methods	1												2	