

Subject Code : 2CS2010103	Subject Title: OPERATING SYSTEM
Pre-requisite :	Basic knowledge of Computer Software and Hardware Knowledge of programming language like C/C++, Data Structure.

Course Objective:

The objectives of the course are to:

- Understand of the modern operating system
- Understand the concept of process, concurrency, concept of deadlock, Memory Management and also learn distributed applications.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	1	-	4	60	40	-	-	100

Subject Contents				
Sr. No	Topic	Total Hours	Weight (%)	
1	Introduction : What is Operating System?, Evolution of OS, Different Services of OS, Types of OS, Characteristics of Modern OS Process Management : Concepts of Process, Attributes of Process, Process Control Block, Data structures, Processes and Threads, Process State, Uni-Processor Scheduling: Scheduling, Types of Scheduling, Scheduling Algorithms. Inter Process Communication(IPC) : Need of IPC, Concurrency, Race conditions, Critical Section, Mutual Exclusion Problem, Solution Approaches, Algorithmic Approaches, Critical Region, Condition for Critical Region, Semaphore : Binary ,Counting, Monitors , Message Passing: Synchronous vs. Asynchronous Message Exchange.	10	30	
2	Deadlock : Deadlock Problem, Deadlock Characterization, Dealing with Deadlock, Deadlock Detection, Deadlock Prevention, Deadlock Avoidance: Banker's Algorithm for Multiple Resources. Classical IPC Problems : Dining Philosopher, Reader's & Writer Problem, Bounded Buffer Problem.	8	20	
3	Memory Management : Memory Management Requirements, Memory Partitioning, Multiprogramming With Fixed partitions Paging: Principle Of Operation, Page Allocation, H/W Support For Paging, Segmentation, Swapping. Virtual Memory : Concept, Performance Of Demand Paging, Page Replacement Algorithms, Thrashing, Locality	10	25	
4	Input/output and Files : I/O Management and Disk Scheduling: I/O Devices, Organization of the I/O Function, OS Design Issues, I/O Buffering, Disk Scheduling, RAID, Disk Cache. File Management : Overview, File Organization, File Directories, File Sharing, Record Blocking, Secondary Storage	6	15	

5	Distributed System : Distributed Processing, Client/Server and Clusters: Client/Server Computing, Distributed Message Passing, Remote Procedure Calls, and Clusters.	4	10
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Course Outcome:

At the end of this course, the student would be able

- To understand the Basic Concepts of Operating System and Architecture of Operating System.
- To study the process management and the concept of Deadlock and clear his/her knowledge With Memory Management techniques.
- To understand whole input/output management and distributed operating system architecture

List of References:

1. Stalling W, "Operating Systems", 7th edition, Prentice Hall India.
2. Silberschatz, A., Peter B. Galvin and Greg Gagne, "Operating System Principles", Wiley-Indian Edition, 8th Edition
3. Tanenbaum A.S., "Modern Operating Systems", 4th Edition, PHI.