

CS207: Operating Systems Design	L	T	P	NIL
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**Course Objective:** To familiar with the fundamental principles of the operating system, its services and functionalities, the concepts of processes, synchronization and scheduling, memory management and need for protection in computer systems

S. No	Course Outcomes (CO)
CO1	Understand the basic concepts, types of operating system and functions of operating systems.
CO2	Analyze the basic concept of process and to analyze different CPU scheduling algorithms
CO3	Understand the basic concept of deadlock and characteristics, analyze various measures taken to prevent deadlock and for its recovery.
CO4	Analyze various memory management schemes and its associated concepts like paging, segmentation, virtual memory concept.
CO5	Understand and evaluate I/O management and File systems including basic concept of disk scheduling and Implementation Issues.
CO6	Understand and analyze case studies of linux, unix and windows.

S. No	Contents	Contact Hours
UNIT 1	Introduction: Operating system and function, Evolution of operating system, Batch, Interactive, Time Sharing and Real Time System, System protection. Operating System Structure: System Components, System structure, Operating System Services.	6
UNIT 2	Concurrent Processes: Process concept, Principle of Concurrency, Producer Consumer Problem, Critical Section problem, Semaphores, Classical problems in Concurrency, Inter Process Communication, Process Generation, Process Scheduling. CPU Scheduling: Scheduling Concept, Performance Criteria of Scheduling Algorithm, Evolution, Multiprocessor Scheduling.	8
UNIT 3	Deadlock: System Model, Deadlock Characterization, Prevention, Avoidance and Detection, Recovery from deadlock combined approach.	8
UNIT 4	Memory Management: Base machine, Resident monitor, Multiprogramming with fixed partition, Multiprogramming with variable partition, Multiple base register, Paging, Segmentation, Virtual memory concept, Demand paging, Performance, Paged replacement algorithms, Allocation of frames, Thrashing, Cache memory organization, Impact on performance.	8
UNIT 5	I/O Management & Disk Scheduling: I/O devices and organization of I/O function, I/O Buffering, DISK I/O, Operating System Design Issues. File System: File Concept, File Organization and Access Mechanism, File Directories, File Sharing, Implementation Issues.	8
UNIT 6	Case Studies: Windows, Linux and Unix.	4
	<b>Total</b>	<b>42</b>