



LESSON PLAN

Course Code	Course Title	Semester	Branch	Periods /Week	Academic Year	Date of Commencement of Semester
23CS4T01	Operating Systems	IV	CSE	5	2025-26	10-12-2025

OUTCOMES

CO. No.	COURSE OUTCOMES	Knowledge Level
CO1	Understanding the basic concepts and principles of operating systems, including process management, memory management, file systems, and protection.	K2
CO2	Make sure of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.	K3
CO3	Illustrate different conditions for deadlock and their possible solutions	K3
CO4	Analyze memory management techniques	K4
CO5	Demonstrate file systems and directory structures	K3

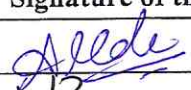
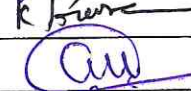
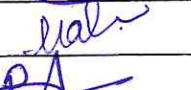
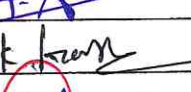
Unit	Out Comes / Bloom's Level	Topic No.	Topics/Activity	Textbook/ Reference	Contact Hour	Delivery Method
I	CO1: Understanding the basic concepts and principles of operating systems, including process management, memory management, file systems, and protection. [K2]	Operating Systems Overview				
		1.1	Introduction	T1	1	Chalk & Talk
		1.2	Operating system functions	T1	1	Chalk & Talk
		1.3	Operating systems operations	T1	1	Chalk & Talk
		1.4	Computing environments	T1	1	Chalk & Talk
		1.5	Free and Open-Source Operating Systems	T1	1	Chalk & Talk
		1.6	Operating System Services	T1	1	PPT
		1.7	User and Operating-System Interface	T1	1	PPT
		1.8	system calls, Types of System Calls	T1	1	Chalk & Talk
		1.9	system programs	T1	1	Chalk & Talk
		1.10	Operating system Design and Implementation	T1	1	Chalk & Talk
		1.11	Operating system structure	T1	1	Chalk & Talk
		1.12	Building, Booting of Operating system and debugging	T1	1	Chalk & Talk
		CBS-1	Case Study: Linux vs Windows Architecture	R1	1	Activity
		Total				13

II	CO2: Make sure of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system [K3]	Process Management System				
		2.1	Process Concept	T1	1	Chalk & Talk
		2.2	Process Scheduling	T1	1	Chalk & Talk
		2.3	Operations on processes	T1	1	1
		2.4	Inter-process communication	T1	1	PPT
		Threads and Concurrency & CPU Scheduling				
		2.5	Multithreading models	T1	1	PPT
		2.6	Thread libraries	T1	1	Chalk & Talk
		2.7	Threading issues	T1	1	Chalk & Talk
		2.8	CPU Scheduling: Basic concepts & criteria	T1	1	Problem Solving
		2.9	Scheduling algorithms	T1	3	Chalk & Talk
		2.10	Multiple processor scheduling	T1	1	Chalk & Talk
		CBS-2	CPU Scheduling Gantt Chart Simulator	W1	1	Demo
		Total				13
III	CO3: Illustrate different conditions for deadlock and their possible solutions [K3]	Synchronization Tools & Deadlocks				
		3.1	The Critical Section Problem	T1	1	Chalk & Talk
		3.2	Peterson's Solution	T1	1	Chalk & Talk
		3.3	Mutex Locks	T1	1	Chalk & Talk
		3.4	Semaphores, Monitors	T1	1	Chalk & Talk
		3.5	Classic problems of Synchronization. : system Model	T1	1	Chalk & Talk
		3.6	Deadlock characterization	T1	1	Chalk & Talk
		3.7	Methods for handling Deadlocks	T1	1	Chalk & Talk
		3.8	Deadlock prevention	T1	1	Chalk & Talk
		3.9	Deadlock avoidance	T1	1	Chalk & Talk
		3.10	Deadlock detection	T1	1	Chalk & Talk
		3.11	Recovery from Deadlock	T1	1	Chalk & Talk
		CBS-3	Deadlock Simulation	R1	1	Activity
		Total				12
IV	CO4: Analyze memory management techniques [K4]	Memory Management Strategies & Virtual Memory Management				
		4.1	Introduction	T1	1	Chalk & Talk
		4.2	Contiguous memory allocation	T1	1	Chalk & Talk
		4.3	Paging, Structure of the Page Table	T1	1	Chalk & Talk
		4.4	Swapping	T1	1	Chalk & Talk
		4.5	Demand paging	T1	1	Chalk & Talk
		4.6	Copy-on-write	T1	1	Chalk & Talk
		Page replacement algorithm & Storage Management:				
		4.7	First In First Out (FIFO) Least Recently Used (LRU)	T1	1	Chalk & Talk
		4.8	Optimal algorithms	T1	1	Chalk & Talk
		4.9	Allocation of frames	T1	1	Chalk & Talk
		4.10	Thrashing Overview of Mass Storage Structure	T1	1	Chalk & Talk
		4.11	HDD Scheduling	T1	1	Chalk & Talk
		CBS-3	Explore all secondary storage devices	W1	1	PPT
Total				12		

V	CO5: Demonstrate file systems and directory structures [K3]	File System, Implementation & Protection				
		5.1	File System Interface, File concept	T1	1	Chalk & Talk
		5.2	Access methods,	T1	1	Chalk & Talk
		5.3	Directory Structure			
		5.4	File-system: structure,	T1	1	Chalk & Talk
		5.5	File system Operations	T1	1	Chalk & Talk
		5.6	Directory implementation	T1	1	Chalk & Talk
		5.7	Allocation method, Free space management	T1	1	Chalk & Talk
		5.8	File-System Internals: File- System Mounting	T1	1	Chalk & Talk
		5.9	Partitions and Mounting	T1	1	Chalk & Talk
		5.10	File Sharing	T1	1	Chalk & Talk
		5.11	Goals of protection, Principles of protection	T1	1	Chalk & Talk
		5.12	Protection Rings	T1	1	Chalk & Talk
		5.13	Domain of protection, Access matrix	T1	1	Chalk & Talk
		Total				13
CUMULATIVE PROPOSED PERIODS				63		

Where: CBS: Content Beyond Syllabus

Textbooks:	
S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
1	A. Silberschatz; P. B. Galvin; G. Gagne, <i>Operating System Concepts</i> , Wiley, 10th ed, 2018
2	A. S. Tanenbaum; H. Bos, <i>Modern Operating Systems</i> , Pearson, 5th ed, 2022
Reference Books:	
S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
1	W. Stallings, <i>Operating Systems: Internals and Design Principles</i> , Pearson, 9th ed, 2018
2	D. M. Dhamdhere, <i>Operating Systems: A Concept-Based Approach</i> , McGraw-Hill, 3rd ed, 2013.
Web Resource Details	
1	https://nptel.ac.in/courses/106/106/106106144/
2	https://onlinecourses.nptel.ac.in/noc25_cs08/
3	https://www.geeksforgeeks.org/operating-systems/

SN	Designation	Name of the Faculty	Signature of the Faculty
1	Faculty I	Dr. A M Durga Kumar	
2	Faculty II	Mr. K. Ch. S Prabhakar Rao	
3	Faculty III	Mr. G Veerendra Kumar	
4	Faculty IV	Mrs. Gubbala Vani	
5	Faculty V	Mrs. P Anajalee Devi	
8	Course Coordinator	Mr. K. Ch. S Prabhakar Rao	
9	Module Coordinator	Mr. K Rajesh Kumar	
10	Programme Coordinator	Dr. P. Srinivasulu	




Principal