LESSON PLAN

Course Code	Course Title	Semester	Branch	Periods /Week	Academic Year	Date of Commencement of Semester
23CS4L01	Operating Systems & Software Engineering Lab Systems	IV	CSE	3	2025-26	10-12-2025

OUTCOMES

CO. No.	COURSE OUTCOMES	Knowledge Level
CO1	Apply UNIX commands and system calls to develop basic OS-level programs	K3
CO2	Implement and analyze CPU scheduling and thread-based programs	K3
CO3	Apply synchronization techniques and deadlock avoidance algorithms	K3
CO4	Implement memory management and page replacement techniques	K4
CO5	Develop software artifacts including SRS, UML diagrams, estimation and test cases	K3

Unit	Out Comes / Bloom's Level	Topic No.	Topics/Activity	Textbook/ Reference	Contact Hour	Delivery Method
I	CO1: Apply UNIX commands and system calls to develop basic OS-level programs [K3]	UNIT-1				
		1.1	Practicing Basic UNIX Commands	W1	1	Hands-on
		1.2	Programs using fork(), exec(), getpid(), exit(), wait()	T1	1	Hands-on
		1.3	Programs using stat(), opendir(), readdir()	T1	1	Hands-on
		1.4	Simulating UNIX commands (cp, ls, grep)	R1	1	Lab Practice
		1.5	Introduction to Nachos OS	W2	1	Demo
		1.6	Installation & experimentation with Nachos OS	W2	1	Activity
					Total	**6**
II	CO2: Implement and analyze CPU scheduling and thread-based programs [K3	**UNIT-2**				
		2.1	FCFS Scheduling	T1	1	Hands-on
		2.2	SJF Scheduling	T1	1	Hands-on
		2.3	Priority Scheduling	T1	1	Hands-on
		2.4	Round Robin Scheduling	T1	1	Hands-on
		2.5	Thread creation using pthread library	T1	1	Lab Practice
		2.6	Concurrent execution of threads	T1	1	Hands-on
					Total	**6**

III	**O3: Apply synchronization techniques and deadlock avoidance algorithms [K3]**	**UNIT-3**				
		3.1	Semaphore implementation	T1	1	Hands-on
		3.2	Monitor implementation	T2	1	Hands-on
		3.3	Producer-Consumer using Semaphores	T1	1	Lab Practice
		3.4	Bankers Algorithm implementation	T1	1	Hands-on
		3.5	Deadlock simulation and analysis	R1	1	Activity
		3.6	IPC mechanisms	T1	1	Hands-on
		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: Implement memory management and page replacement techniques [K4]**	**UNIT-4**				
		4.1	Fixed partition – First Fit	T1	1	Hands-on
		4.2	Fixed partition – Best Fit	T1	1	Hands-on
		4.3	Fixed partition – Worst Fit	T1	1	Hands-on
		4.4	FIFO Page Replacement	T1	1	Lab Practice
		4.5	LRU Page Replacement	T1	1	Lab Practice
		4.6	LFU Page Replacement	T1	1	Lab Practice
		4.7	Paging Technique Simulation	T1	1	Lab Practice
		4.8	File Allocation – Sequential	T1	1	Hands-on
		4.9	File Allocation – Indexed	T1	1	Hands-on
		4.10	File Allocation – Linked	T1	1	Hands-on
					Total	**10**
V	**CO5: Develop software artifacts including SRS, UML diagrams, estimation and test cases [K3]**	**File System, Implementation & Protection**				
		5.1	Software Requirement Specification (SRS)	R2	1	Activity
		5.2	DFD & CFD preparation	R2	1	Lab Activity
		5.3	UML Diagrams	R2	1	Lab Practice
		5.4	Software Estimation techniques	R2	1	Activity
		5.5	Test Case Design	R2	1	Lab Practice
					Total	**5**
					CUMULATIVE PROPOSED PERIODS	**33**

Where: CBS: Content Beyond Syllabus

Textbooks:	
S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
1	A. Silberschatz; P. B. Galvin; G. Gagne, *Operating System Concepts*, Wiley ,10th ed, 2018
2	A. S. Tanenbaum; H. Bos, *Modern Operating Systems*, Pearson, 5th ed, 2022
Reference Books:	
S.No.	Authors, Book Title, Edition, Publisher, Year of Publication
1	W. Stallings, *Operating Systems: Internals and Design Principles*, Pearson, 9th ed, 2018
2	D. M. Dhamdhere, *Operating Systems: A Concept-Based Approach*, 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. G Veerendra Kumar	
3	Faculty III	Mrs. Gubbala Vani	
4	Faculty IV	Mr. K. Ch. S Prabhakar Rao	
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	

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